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Correspondence.—Wishing to make this JOURNAL a gazette of intelligent discussion to those of our readers who may wish to gain or give information on the subjects to which its columns are devoted, correspondence is solicited for publication from all who make the study of those subjects a pleasure or a profession.

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BRIEFLY TOLD.

THE GUILD OF GAS MANAGERS AGAIN IN ACTION.—"The Guild of Gas Managers held the first meeting of the season in Young's Hotel, Boston, Mass., on Saturday, November 9th. There was an excellent attendance of members, and a number of guests shared in the proceedings. The meeting was opened by the President, Captain McKay, in his usual happy manner. After the disposal of business, which had accumulated during the vacation period, the second of a series of papers, on "The Economical Production of Candle Power," by Mr. Charles F. Prichard, was read. The topic specially treated in this paper was benzole enrichment. The time allotted for the discussion was not sufficient for the completion thereof, so after dinner the debate was continued and concluded. Messrs. Coffin, Norcross, Learned, Wyant, Kennedy, Quinn, Prichard and others participated, and knockout blows were dealt and countered on both sides. The final result was, however, satisfactory to all, inasmuch as knowledge concerning some of the laws and facts relating to enrichment were fully shown up. Indeed, although it may appear unnecessary to remark it, those who have access to these meetings, either as members or guests, are to be congratulated. The utmost good comradeship is shown. A spade is called a spade, and nothing, seemingly, better delights a member than to catch a fellow member napping on some technical point. Under such treatment all poise and pose are lost and the members, with a heart-to-heart punt and a hand-to-hand formation, give the subject a low-down tackle.—C."

PERMANENT HEADQUARTERS, AMERICAN GAS INSTITUTE.—Mr. A. C. Humphreys, President of the American Gas Institute, writing to us under date of the 22d ult., forwards the following notification, which should be read and remembered by those in the Institute membership and by those who have to make communication to its executive:

AMERICAN GAS INSTITUTE,
OFFICE OF PRESIDENT,
3 NASSAU STREET, NEW YORK.

To the Members of the American Gas Institute: Permanent headquarters of the Institute have been established in the building of the United Engineering Societies, No. 29 West 39th street, New York city. Mr. James W. Dunbar, in accepting re-election to the Secretaryship and Treasurership of the Institute, was promised that he should not be burdened with the details of these two offices. The members of the Institute are, therefore, respectfully requested to address their communications as to matters of routine in connection with the office of Secretary and the office of Treasurer to the New York headquarters. Checks for dues should be made payable to the order of the American Gas Institute, and forwarded to the New York headquarters, thus relieving Mr. Jones, the retiring Treasurer, from the burden of forwarding such remittances to New York. Respectfully yours,

A. C. HUMPHREYS, President.

FIFTY-FOURTH ANNUAL MEETING, AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—According to the official notice, recently to hand, the 54th annual meeting of the American Society of Mechanical Engineers will be held in the Engineering Societies' Building, 29 West 39th street, New York city, December 3d to 6th insts. Symposiums on foundry practice, giving the experience of prominent men in that line of work, have been arranged. The specific heat of superheated steam will be taken up, and a very important and exhaustive work by a Professor of Engineering at Cornell University will be presented. The utilization of low grade fuels in gas producers, combustion control in gas engines, tests of producer gas engines, etc., will be given a session. Other live topics, such as industrial education, power transmission by friction driving, cylinder port velocities, etc., will be discussed. All of these subjects have been treated by prominent engineers of Europe and America, professors in our universities, and men eminent in the particular work of which they write. The Committee has on hand an interesting excursion for Wednesday afternoon, and an address in the evening which will be especially enjoyable.

LIBRARY OF CONGRESS. DEC 2 1907 SMITHSONIAN DEPOSIT.

CURRENT COMMENT.—

It looks rather untimely, but possibly that is all the better, since the men believe it should happen, a strike should be ordered in these days of dischargings. The plain fact in the current instance, however, is that the employees in the works of the Pana (Ills.) Gas and Electric Light Company have gone on strike, because the Company refused to grant them an increase of $10 per month in their pay.

The Massachusetts Board of Gas and Electric Light Commissioners has authorized the Malden and Melrose (Mass.) Gas Light Company to issue 2,500 new shares of stock, at an upset figure of $120 per share.

The Minneapolis (Minn.) Gas Light Company, in its proposals for the public lighting of that city by gas for one year from January 1st prox., agreed to supply gas to 6,000 or more lamps, at the rate of 90 cents per 1,000 cubic feet.

Mr. William Shegog, Superintendent of the gas plant system in the House of Correction, Holmesburg, Pa., since 1880, died from the effects of an apoplectic stroke while on his way from the works to his home on the afternoon of November 18th. He was a vestryman of the Holy Innocents Episcopal Church of Tacony, Pa., and was prominent in the affairs of the Henry Disston Lodge of Odd Fellows.

Correspondence

[The Journal is not responsible for the opinions expressed by correspondents.]

Mr. Egner on the Matter of Vertical Retorts.

Lowenberg Building,
Norfolk, Va., Nov. 23, 1907.

To the Editors American Gas Light Journal: In your issue for the 18th inst., you were pleased to publish my letter relating to the spread, appreciation of, and claims made for the vertical retort system. From sources obtainable by all who are interested in this (to the gas industry) very important subject, but which only a small minority of American gas men have availed themselves of, I abstract the additional information that the advantages not only claimed, but now well established, for the standing retort system, and briefly mentioned in my former communication, include a material reduction in the production of bisulphide of carbon, amounting to more than 50 per cent. It is accounted for by the fact that, in the older systems of horizontal and inclined retorts the gases produced must come into intimate contact with the bright red, upper side or roofs of the retorts, whereas in the vertical retort the bulk of the gas made passes through a temperature below a red heat. "To put it in another way, the chief reason for the observed difference in the bisulphide of carbon is the non-existence in the vertical retort of the large superheated, free space which leads, in horizontal and inclined retorts, to the formation of pitch, naphthaline and carbon deposits." The quotation is from page 471 of *Journal of Gas Lighting*. Thinking these facts are of material interest to many of your readers who do not subscribe to foreign journals, I beg leave to submit the same, with your approval. The quoted authority also points out that, by reason of this smaller production of sulphur compounds, it would now be possible to use coals which formerly had to be rejected because of the amount of sulphur which they contained. The latter fact must prove of immense value to gas makers in the Middle West especially, where coal, otherwise of good quality and naturally costing less than gas coal supplied from distant points, had to be rejected because of the sulphur contained.

Respectfully, Frederic Egner.

Mr. Shattuck on Editor Bump and the Journal.

Suburban Gas Company,
Chester, Pa., Nov. 27, 1907.

To the Editors American Gas Light Journal: I notice in "Wrinkle No. 9," in your issue of Nov. 25th, you have copied Mr. Bump's report, given to the American Gas Institute. Mr. Bump cut my article down considerably and introduced several grammatical errors, which do not read very well. I am not sure whether you have copied this just as he wrote it, or whether some of the errors were your own. In the first sentence the meaning should be that the holder tank was utilized as a settling basin. The U-pipe, of course, was used to pump the tar into the tank. In the next sentence the word "other" should be plural.

Yours very truly, J. D. Shattuck.

[Continued from page 885.]

PROCEEDINGS AMERICAN GAS INSTITUTE, SECOND ANNUAL MEETING, HELD AT THE NEW WILLARD HOTEL, WASHINGTON, D. C., OCTOBER 16, 17 AND 18, 1907.

First Day—Afternoon Session.

The Institute was called to order at 2:15 P.M., Vice-President Prichard in the chair.

Discussion on the Paper[1] by Mr. C. H. Dickey.

Mr. Doty—Mr. President and Gentlemen: The Institute is to be congratulated upon the presentation of the scholarly paper Mr. Dickey has given to us. Those who know Mr. Dickey's modesty as I do, know that he needs no words of praise from me; but I do want to congratulate Mr. Dickey upon the tolerance of thought and the ideas he has presented. If I were to criticize the paper the only thing which occurs to me is to mention the absence of technique, but I am sure each gentleman from his own experience can supply all omissions of that nature. It is appreciated that an address of this kind necessarily is general to its application. If there is anything omitted referring to the conditions of one's own franchise, it is only necessary to consider one's own franchise to bring a realization of what may have been omitted. As far as franchises are generally concerned, from the city's point of view, the interest of the public is primarily in good service and fair prices. When I used the word "franchise" above, I meant the franchise to do business; or the license, so-called. It is appreciated that franchises are of two kinds, one the right to be a corporation, which is a franchise granted by the State, the other a franchise or license granted by the city. Although Mr. Dickey does not differentiate between the two, I have no doubt he had that thought in mind, but Mr. Dickey emphasizes the feature of the franchise imposing upon us the obligation to give good service at a fair price. I would emphasize the meaning of good service. It is treating the public fairly and justly, extending the gas mains to give to the people of the city the convenience and comfort of the use of gas, and to make gas for distribution of a good quality. Some franchises have provisions specifying the candle power requirements, and perhaps later on will contain provisions specifying the heating value of the gas. Many franchises have other provisions, such as not to be a burden to the streets, to be responsible for damages, and in many other ways fully protecting the city's interests. What is a fair price is a large question, and naturally cannot be discussed here, for a fair price, as was said of the tariff, is a local issue. I think we are drifting away from the idea of municipal ownership as being impracticable and un-American, and of no advantage particularly to the public. Regulation of private corporations is of far greater interest to the public, and the latter can be depended upon to take good care that the franchise obligations we have undertaken are fulfilled. I was glad Mr. Dickey made reference to the fact that obligations rest upon the people as well as upon the corporation. I think this is quite important, for the stockholders, the owners of the property, are entitled to reasonable protection. The stockholders are entitled to the fullest measure of security for their investment, and this I would emphasize. If the public require us to invest our capital to make extensions of mains and to run services, and in addition have adequate capacity for manufacturing to furnish a good quality of gas, and have inspectors see that the measurements are correct, all of which burdens they have put upon us, we certainly have the right to ask that our franchises be secure from attacks by raiders or ill-advised municipalities which threaten the security of the investment. Just how this security of investment is to be obtained is a broad question, and is a matter of technique hardly to be discussed from the floor of the Institute. I think we are all agreed that we ought to have the legal rate of interest on our investment in public service corporations, and how much more we ought to be permitted to earn than the legal rate of interest is a question. Some would advocate at least double that amount. I think myself this is none too much. This is especially true in view of the risk and hazardous nature of our business, so it is not enough to earn simply the amount to be paid in cash to the stockholders. A good rule is "a dollar for dividends and a dollar for surplus" from the earnings. The surplus may be in the nature of a sinking fund for short term franchises, or a reconstruction reserve, or a fund for liability insurance—that is, public liability insurance, or any of the other elements of risk which we are apt not to include in our reports. We are too often inclined to

1. For the text of the paper—"Obligations Imposed by the Possession of a Franchise"—see Journal, *ante*, p. 882.

include in operating expenses the mere items of manufacture, distribution and sale; perhaps we include an item of general expense; but this does not include all of the contingent items of which I have made mention. The public consequently get an exaggerated idea of the profits of the corporation, simply because we show the returns greater than they are. Perhaps this practice has grown from a desire to sell stock or to make a manager's record, and the public cannot be blamed for taking in the viewpoint of the company. The municipality is very apt to take us at our own valuation. Mr. Dickey has called attention to the contract relations existing in a franchise. This goes without saying, for franchises have been interpreted to be contracts. You can rest assured that the public will see that its end of the bargain is carried out so far as the obligations of the company are concerned, but the difficulty has been to get the public to see that their end of the bargain ought to be likewise carried out. Mr. Dickey presents the idea of "service" for the public service corporation. Now I like the expression of this idea, and I think it truly tells us what our business is. Our business is one of service. Mr. Dickey has made use of admirable language, which it will pay us to read, as to what constitutes service. Service to the public recognizes to the fullest that we are not working for the corporation alone, but serving the people from whom the corporation gets its rights and privileges. I would like to dilate more on that, but the paper will be in your hands. I would like to emphasize the appeal for co-operation. I have said on other occasions that co-operation and corporation were related terms. We want co-operation. We want to have the co-operation to maintain the balance that is so necessary between our relations to the public and the relations to our employers, and the manager, superintendent or engineer who can bring about the greatest degree of co-operation between the public, the newspapers, the co-operation of the stockholders and the employees, and the man who can harmonize all of these various elements for mutual advantage, is the man that will have the greatest measure of real success. [Applause.]

The Vice-President—Is Mr. Doherty in the hall? I would like to hear from Mr. Doherty if he is disposed to favor us.

Mr. Doherty—I will have to ask to be excused. I am sorry I am not prepared to talk.

Mr. Burleigh—Mr. Dickey's paper was interesting to us, particularly as showing what a patient, long-suffering man the gas man is. When he has got that one-sided contract, the franchise, talk well of it. After years and years of well doing, he enjoys being told to keep on doing well. We are to come all the way to Washington to be told in a delightful paper that, notwithstanding the other fellow's failure, the man on the other side of the contract, that we must keep on giving, keep on trying to please them, no matter what the demands may be; that, having turned one cheek and having it wounded, we are to turn the other to them until both are sore. How long will we keep on doing it? We have almost reached the limit of endurance in some localities. His experience with the public is delightful. It has not been mine. His experience with the newspapers is positively unique. I never had anything like it.

The Vice-President—Does any other gentleman desire to offer any remarks on this paper? If so, now is the opportunity. No one else caring to speak, the subject is closed. We will take up the next matter on the programme, the paper by Dr. A. C. Humphreys, on

DEPRECIATION.

[For the text of the paper see JOURNAL, *ante*, Oct. 21 and 28.]

Dr. Humphreys—Mr. Chairman, I want to add one word to my paper. I had intended to recommend that the subjects of depreciation and uniform accounting be referred to a special committee. I presume that is hardly now in order. I suppose, in view of the action that was taken by the Institute this morning in amending the Constitution, such matters will be referred to one of the two standing committees.

The President—Before taking up the discussion of Dr. Humphreys' paper we will receive a communication from Mr. W. H. Gardiner, Jr.

Mr. Gardiner—Mr. President and Gentlemen: This is a

COMMUNICATION TO THE INSTITUTE FROM THE NEW ENGLAND ASSOCIATION OF GAS ENGINEERS BY THE LATTER'S COMMITTEE ON UNIFORM ACCOUNTING AND DEPRECIATION.

At the 37th annual meeting of the New England Association of Gas Engineers, held in Boston, February 20 and 21, 1907, Dr. Alexander C. Humphreys presented a paper[1] entitled "The Present and Growing Need for the General Adoption of a Uniform System of Records and Accounts," which, because of its frank and able treatment of the situation, was immediately recognized throughout the country as a most valuable contribution.

Pursuant to a suggestion embodied in this paper, and to a motion passed by the New England Association, its President appointed a committee of three to consider the matters of uniform accounting and depreciation and to bring these to the attention of the American Gas Institute.

Therefore, this committee does hereby respectfully bring the question of "Uniform Accounting" and of "Depreciation" to the attention of the American Gas Institute.

In doing so we would say that, pending such action as the American Gas Institute may take on these questions, we have not as yet undertaken any definite work. And yet we have given close attention to the situation as it exists to-day.

On the one hand we note with concern the enactment of commission laws in several new States, which authorize the supervising commissions to put in effect some system or systems of uniform accounting, and we expect wider action along these lines in the near future. We say we note this movement with concern, not at all because we might not be in sympathy with it, but solely because our researches to date have failed to reveal any system or systems of uniform accounting which would seem to be of that degree of comprehensiveness, flexibility and excellence which would warrant their definite adoption as State or National systems of uniform accounting. On the other hand, we note with appreciation the close consideration which the subject of uniform accounting is receiving generally, and in particular by such bodies as the American Street and Interurban Railway Association and the National Electric Light Association.

At the last convention of the latter Association a preliminary report on uniform accounting was submitted. During its discussion, the expediency and desirability of co-operating with the accounting committees of other associations were expressed. The sentiments thus expressed by the electric light accountants were reiterated by members of the traction and of the gas accounting committees who were present and who took part in the discussion.

Therefore, we trust that a motion will be made, and will prevail, authorizing the incoming President of the American Gas Institute to forthwith appoint a committee of seven on uniform accounting and depreciation, said committee to be authorized to confer and co-operate with similar committees of other bodies.

Respectfully submitted, W. H. GARDINER, JR.,
EDMUND CATHELS,
J. J. HUMPHREYS.

Discussion.

Mr. Gardiner—I do not know whether or not that last suggestion is in order, in view of the change in the Constitution.

The President—It is entirely in order to move that the matter be referred to a committee, or that any matter be referred to a committee, but under the Constitution it would not be named by the Chair. The Public Relations Committee has to decide this.

Mr. Doherty—Do I understand the Chair to rule that the appointment of a special committee on this is out of order?

The President—No, sir; I do not rule that a special committee is out of order. The Chair ruled that it would be referred to the Committee on Public Relations and that the special committee, if one is appointed, will not be appointed by the Chair.

Mr. Doherty—I want to recommend that a committee of seven, on Uniform Accounting and Depreciation, be appointed, with the idea that, by appointing a committee of seven, perhaps the committee can be divided into two divisions. I move that the new Committee on Public Relations be instructed to appoint that committee.

Mr. Thompson—I wish to ask, in view of the appointment of the Public Relations Committee, and the reference to it of all papers, whether it is not for that Committee to decide as to the advisability of appointing a sub-committee to consider any paper referred to it, and that this body can only suggest to the Public Relations Committee the advisability of such an appointment.

The President—The Chair has ruled it is entirely proper for the Institute to recommend to the Public Relations Committee that it appoint a sub-committee to carry on any work this Institute may desire. [Seconded.]

A Member—What was the motion by Mr. Doherty?

Mr. Doherty—My motion, or recommendation, was that a committee of seven be appointed to consider this matter in the interim and report on the subject of uniform accounting and depreciation.

1. See JOURNAL, Vol. LXXXVI., March 11 and 18, 1907.

The President—Gentlemen, are you ready for the question? Those in favor will say "Aye." Contrary minds, "No." [Carried.] Pending the submission of this matter to a committee it is proper, if anybody in the Institute desires to discuss the question, to discuss the paper as read.

Mr. A. S. Miller—Suppose a company sets aside a sum every year to cover depreciation and puts that sum into extensions. If at the end of a term of years it becomes necessary to replace a holder or building, would a commission grant permission to the company to issue bonds for the purpose?

The President—You ask would the commission do that?

Mr. Miller—Yes; would such permission be granted? It would seem prudent for a company to issue bonds or stock for its improvements from time to time, keeping such bonds or stock in its treasury to be sold from time to time when necessary to reimburse the depreciation fund for the sums used for extensions and improvements. If the depreciation fund is used for improvements, and securities issued to reimburse the fund when repairs or replacements become necessary, the claim might be made that the company was issuing stock or bonds for the purpose of making replacements.

The President—Mr. Carter?

Mr. Carter—Mr. President, replying to Mr. Miller's question, as I am from a State that has a public service commission, I will venture the opinion that, in the event of his employing his reserve fund for the purpose of making additions to his plant, and the renewal or replacement for which the fund was designed becoming necessary, his application to the commission would be not for consent to raise funds to pay for replacement of plant, but to pay for the new plant he had acquired, and the funds so raised would restore to the treasury the reserve fund which had been temporarily employed for the purpose of construction. In other words, Mr. President, my understanding is that the commission would take up the matter of permitting the issue of bonds, for example, upon satisfactory evidence that additional plant had been acquired with what was to all intents and purposes borrowed money, though borrowed from a reserve fund. I do not think there would be any difficulty whatever in procuring funds under these conditions. In fact, the employment of a reserve fund for such a purpose would seem to me to be perfectly logical. It seems to me that no one can have listened to the paper just read by Dr. Humphreys without being impressed with the importance of the recommendations he makes with regard to uniformity in accounting with respect to assets, to operation and to depreciation. In fact, the Doctor has so thoroughly covered the subject that it seems to me he has left very little to be said. Changes in the method of keeping accounts are not very quickly or easily effected. It is a long process, especially when, as may be the case with many companies represented here, the accounts reflect to a very great extent a corporate policy, with respect to the values at which the assets shall appear upon the books, and with respect to provision for depreciation. I think the probability is that in the past the subject of depreciation has received very little serious consideration from corporations, both general and public service; but I believe that the time is coming when it will receive more attention from public service corporations, if not of their own motion, then by direction of public service commissions. I think in the past very likely the same variation has existed between corporations as exists between individuals, just as you find every degree of prudence and every degree of extravagance by individuals, you will find every degree of prudence and every degree of reckless disregard of future possibilities displayed by corporations, with sometimes very disastrous results. There is no doubt in my mind that a company whose accounts state the facts with regard to the value of its plant and with regard to its cost of operating will have a great advantage in proceedings before any legislative committee or State or Federal Commission. In court proceedings the fact that a company's accounts state other than the fact will militate against it. The company whose accounts do not give correctly its operating results, or which understate the value of its assets, may be put in the position of having to prove that its accounts are wrong, and it will spend many unhappy quarters of an hour doing this. The court would be seeking, of course, the facts with respect to the value of the property, and would accept testimony in this respect that might conflict with the accounts. It will save a company a good deal of trouble, however, if the accounts state the facts. It seems to me that the Doctor's recommendation with respect to accounts is a recommendation looking rather to a change in corporate policy than to a change in the method of accounting. I think the conditions which the Doctor criticizes with respect to the Massachusetts Companies' accounts are due wholly to policy and not to accounting. In other words, I do not think that substituting one method of accounts for another is going to remedy such conditions. The Doctor's proposition, as I understand it, is that the accounts of public service corporations should show the actual value of their property; but would this rule work equally satisfactory both ways? Its adoption might mean the writing up of values in some localities, and the writing down of values in other localities. I have had occasion to observe, and incidentally to attack, the method employed by certain persons retained as experts in connection with rate litigation, and have noticed how their practice of adapting figures to their peculiar point of view has been facilitated by the absolute lack of uniformity in the records and accounts of gas companies. With respect to the value of assets, however, I do not think that any court of law will attach much importance to testimony respecting the book value of plants distantly located as bearing upon the present value of the plant of a local company. I doubt whether a court could do so. The best evidence, and the evidence which the court is most likely to accept with respect to the value of the property, is the testimony of competent experts as to the cost of its reproduction and the cost of putting it in a condition as good as new. I am inclined to think that a recommendation that depreciation be taken care of in anticipation will not be received with equal enthusiasm by all companies. A suggestion to some companies that they charge anything more than current expenditures against current earnings would not be very favorably received; other companies would agree to the principle in a general way, but would reserve the right to modify it in its application according to the exigencies of their own situation. The majority, however, will I think lean towards a full and adequate allowance in current expenses for future contingencies. With respect to depreciation, I have had occasion to observe that what the court is likely to pay the most attention to is a company's history. A company that has done business for a number of years with plant of all ages is likely to have accumulated very useful data of a kind that I think commends itself most favorably to a court of law. There is an advantage also to be derived from having the accounts show very plainly all expenditures for repairs and current renewals, as well as final renewals. Referring to the work the committee which has just been appointed will have to perform, I would suggest that with respect to repairs the system of the American Gas Light Association does not cover all the ground. There are some items of repairs that do not appear as such. For example, if my memory serves me aright, "distribution expense" includes the cost of repairs to buildings occupied by the distributing department, and "office expense" includes the cost of repairs to office buildings. These repairs are just as important as any other and ought to stand out as such, because in any consideration of the subject of repairs and renewals, and in any comparison between the operations of a company in different years, or between different companies, the figures shown in the repair accounts and in the renewal and replacement accounts combined will be carefully considered. The line cannot be very closely drawn between what are strictly repairs and what are strictly renewals. In fact, we all know there is included in repair accounts a great deal which might properly be termed replacements and renewals. My personal feeling is favorable to broad treatment of the subjects of depreciation and contingent expense. I believe that both are important; one no more so than the other. I am of the opinion also that is no good reason why there should be any differentiation between the reserve for contingent expenses and the reserve for renewal and replacement in so far as their being included in the cost of gas is concerned. My judgment would favor including both of them. I do not like the word "depreciation." It is a word that your opponents will use to your disadvantage. As a matter of fact, I think it can be expressed better. All of you know that depreciation from decay is not the only cause for displacement of plant. The greater loss is from displacement on account of supersession. You do not use your engine until it wears out. You use it until its capacity is no longer adequate for the load you have put upon it. You displace other apparatus because it is not large enough to meet the demands made upon it. You rebuild holders because they are too small, or because you cannot buy additional ground advantageously. You continually have to tear down and build up. You do not give your plant a chance to wear out. Therefore, I would call this loss "supersession," rather than depreciation, because the bulk of it is supersession. I believe that will prove the case with most companies represented here. It is the history of the Company I represent, which covers three-quarters of a century, taking the predecessor Companies into account. I think if a company accumulates a fund equal to 10 per cent. of the value of its property, and maintains such a fund, it is

prepared for any contingency or emergency that may arise, whether in the way of renewals, extraordinary accidents, increase in cost of material or labor, or decrease in the volume of business, or from whatsoever cause. My method of creating such a fund would be to use a life table as a means of determining what would be a sufficient amount to put aside annually to take care of renewals. I would then determine what amount, in the judgment of my associates and myself, would be adequate to take care of such contingencies as an increase in the cost of material or labor, extraordinary accidents and things of that nature. I would take both amounts, and, finding what the total amounted to per 1,000 cubic feet of gas sold, I would use that as a factor for calculating the amount to be charged to contingent expenses every month, and credited to a renewal or contingent account, against which account I would charge annually final renewals and contingent expenses, and allow the fund to accumulate until it amounts to at least 10 per cent. of the value of the plant and property.

The President—Mr. Cowdery, may we hear from you?

Mr. Cowdery—Mr. Chairman, I was unable to read this paper of Dr. Humphreys before its presentation to-day, and in following Dr. Humphreys' reading I fear my reasoning did not travel as fast as Dr. Humphreys' reading, and, therefore, I believe I am not able at this time to criticize Dr. Humphreys' paper in detail to any extent. I believe that this paper is one to which we would have to give very close study, and a great deal of it, before we would be able to reach a definite conclusion. I think it would be better, instead of trying to comment severely on this paper of Dr. Humphreys to-day, if we were to allow it to rest and come before our meeting a year from now, when criticisms in the nature of other papers written upon the subject perhaps could be taken up. I believe that in the coming year we are going to learn a great deal more about depreciation, so-called, than we ever have been able to pick up or learn before. I presume, so far as I have been able to follow the paper that, in a general way, I quite agree with Dr. Humphreys' reasoning. I think Dr. Humphreys has brought out a great many fine points in this matter that we have not materially thought of before. For instance, take the case of Mr. Forstall's examination of the Buffalo plant to determine the present depreciation thereof. I think a very great point is made there for which we will find a great use. Further than this I do not believe I can comment upon the paper.

The President—Before closing the consideration of this paper I would like to ask Mr. Barker, of the Massachusetts Commission, whom I am very happy to see here, for any suggestion that may occur to him.

Mr. Barker—Mr. President, I recognize the kindly intent on your part in asking me to say something upon the subject now before the Institute and I appreciate your kindness. I think I would appreciate it still more if I had received some notice in advance that I would be asked to speak. The importance of depreciation in supervision and in rate making has always been recognized by the Commission of which I have the honor to be a member. It has not always been easy, however, to determine the fair amount to be allowed therefor. It seems to me that the very able paper just read suggests in striking contrast the method of approach of a man who regards this subject from a purely theoretical point of view and that of a man who combines the academic knowledge with practical experience. It is a business proposition, and as such I think all fair minded men will appreciate the importance of a practical knowledge of the business for its wise and safe solution. We have never in our administration been led very far by a purely academic presentation of this important subject. A theoretical study of the question has its value and may aid in solving the problem, but it cannot alone complete the solution. The determination of the proper amount to be provided in any year, or in any series of years, is the most complex question with which a manager has to deal. He must bring to it all of his own experience and that of others, so far as he can ascertain it, and upon the wisdom of his final decision will largely depend the success or failure of the corporation under his care. No board of directors would be likely to select a man without business experience however able his theoretical knowledge might be, as a manager of a large property intrusted to their care, neither would they make him their engineer-in-chief. The problem of depreciation charges is a business question, first and foremost. You will agree with me so fully, I am sure, that I need not spend time to demonstrate this proposition. I think it was a very pertinent remark of Mr. Carter when he said that the determination of the question of depreciation in accounting is a question of public policy more than a question of mere accounting and the method by which it is to be handled will be very significant of the general policy of the corporation which will be affected by the business necessities of the situation. It always has been so and it probably always will be. In any attempt at supervision I think that, if we are to fairly and sufficiently regard the ultimate public interest, we shall approach the depreciation problem as a purely business proposition. I think, Mr. President, that I ought not take up your time further. A great deal of attention has already been paid to this important subject, and I assume that it is to have more consideration by the Institute at some other time.

Mr. A. E. Forstall—Mr. President, I want to emphasize a little the method of treating depreciation to determine the present value of a property, as illustrated by the case with which my name has been connected in the paper. It has seemed to me that the only way in which to determine the then present value of a property at any particular time is to, first, determine its cost of reproduction absolutely new, and then to determine the cost of putting the existing plant in a condition that is equivalent to be absolutely new. That is the way in which I always work, and always expect to work. Of course, that brings in both the question of physical decay, and that of its adequacy with reference to the amount of work required by the company, because the latter affects the question of whether it is worth while to put the apparatus into a condition as good as new. If it is not, why then, of course, that has to be taken into consideration. But, assuming that that is the correct way of getting at the present value, this leads me up to the point of saying that a great deal of stress ought to be laid upon the statement made in one of the conclusions of Dr. Humphreys' paper, that the life table should be corrected and amended from year to year as required by changes in existing conditions. The tendency of such experts as Prof. Marks, Mr. Adams and others of that class, is not to base depreciation upon the condition of the plant, but to take, for example, a piece of apparatus and simply to say that since its probable life is 30 years, and it has been in use 20 years, 66⅔ per cent. of its value has gone. Now that seems rather extreme, but in a case with which I was connected, Mr. Adams did take a piece of apparatus and attempt to fix its value in just that way. He acknowledged, however, that, so far as he knew, it was in good condition and perfectly adequate for the purposes of the company, and for any purpose that they might require for 10 or 15 years in the future. But his contention was that so many years is the average life, and that 30 per cent. of these had passed, and, therefore, that piece of apparatus was worth 30 per cent. less than a new one. Now, in regard to the figures on our books, I think if we rely too much on estimates of yearly depreciation without making actual examinations to find the value of the plant, we will lay a certain amount of foundation for adverse theories of that kind. We want to be very careful to avoid that. Another point made by these so-called experts is that the idea of charging each year the actual loss by depreciation for that year, instead of taking care of depreciation by a sinking fund, is a theory that has been brought up in the last 2 or 3 years to meet the exigency of the occasions which have arisen. Bearing on that very important point we have this quotation from Dicksee, page 30, also one from Mr. Leake, and there is also a quotation that I would like to call attention to by Matheson, given in his book, "The Depreciation of Factories," in which he states that the cost of depreciation is the annual loss through depreciation. With their experience, I think it is fair to assume that other people can look at it in the same way without much hesitation. Now, as to the reserve to cover contingencies like changes in the price of material, and things of that kind. The necessity for that was strikingly impressed upon me by this same case that was spoken of where Mr. Adams took off 30 per cent. on apparatus as good as new. I claimed that 5 cents per 1,000 feet of gas made should be set aside as a reserve to meet possible increase in prices of material and other contingencies. I was not cross-examined particularly on that, but after the hearing the Chairman of the Commission, who was hearing the case, met me at the station, and while waiting for the train to come to take us out of town I had a conversation with him. and he rather took me to task for that on the ground that it was too much, because, owing to the high cost of materials at the time, he thought prices were not apt to go up. I acknowledged that prices were high, but told him that even so there was necessity for a 5-cent reserve. That company is now paying a half a cent more per gallon for gas oil than they were at that time, and that alone makes a difference in cost of gas of over 2 cents out of every 5 already.

Mr. Young—Mr. President, I have been much interested in Dr. Humphreys' paper. No one, after hearing it read, ought to be confused between the actual cost of depreciation and figures obtained from methods of treating same. The balance sheet of a company should represent the company's exact condition so far as that is possible. If we fail to take up depreciation charges on physical property the only tenable theory that we can advance for not doing so is that the value, not shown on the balance sheet, of the intangible property of the Company, franchises, goodwill, etc., is equal to the amount of depreciation we fail to take up. Dr. Humphreys' paper is, I think, unique. It is remarkable how very little literature there is on the subject of depreciation. Dr. Humphreys has referred to the works of Prof. Dicksee, and Mr. Forstall to Matheson's work on "Depreciation of Factories." Dr. Humphreys has also mentioned a paper by chartered accountant, Mr. P. D. Leake, and Dr. Humphreys has now made a notable contribution to the subject. The names of Dicksee and Matheson are those of authorities on this subject and we must now add the two other names to our list. Mr. Carter has suggested the term "supercession" for use in place of the term "depreciation." While I think the term supercession is a good one I should not be in favor of doing away with the use of the older term. Depreciation is a word that has come to mean a great deal. Its usage has been general. Accountants in England have always used the term as covering all of the three elements that Dr. Humphreys named, and accountants in this country have followed that practice. The term "depreciation" is so well understood, and has become so intimately associated with its various constituent elements, that I do not think it would be a good plan to discontinue its use. The question of how much depreciation should be shown in our accounts is, of course, another matter. We know there is such a thing as depreciation and we can approximate its cost, but how it should be brought into the accounts is a matter that requires careful consideration. I have been attending this week a convention of the American Street and Interurban Railway Accountants' Association which is very much interested in this matter of depreciation. They have a committee on a standard form of accounts. This committee is working in accord with the Interstate Commerce Commission and with various State Public Service Commission. The Committee on Uniform Accounting, of the National Electric Light Association, are to hold a joint

meeting with this street railway committee, and the subject of "depreciation" will probably be given more consideration than any other matter. The resolution which was offered by Mr. Doherty is a good one. We want a committee on accounting that has an understanding of accounts to co-operate with the railway and electric lighting committees so that this important work relating to accounts may be properly considered. I have always regretted that Gas Associations generally have not paid more attention to accounting, and I hope this paper will mean a departure from that policy.

A Member—One point which has been brought is that which makes you think how necessary it is to be absolutely exact in charging off matters of depreciation. When it comes to making your factory returns jibe with your books, then, watch out; do not put too low a value on your plant or the municipal people will take it up. It makes you think how very closely you must watch yourself.

Dr. Humphreys—Gentlemen, I feel that I have taken too much of your time already, but there are a few things I should like to add, which will take but a few minutes to say. I thank you for the discussion so far as it has gone; I will refer only to some of the points which have been made. Let me refer to the statement, made by Mr. Young, as to the limited amount of literature on this subject. One important paper which was written some years ago, and which has not been mentioned, is a paper prepared by Mr. G. G. Ramsdell, and read before the New York Society of Gas Lighting. Whether that is now open for general reference I do not know, but I presume it is so. With regard to Mr. Carter's reference to the fact that the courts probably would not accept as of material importance the valuations of plants located at a distance as affecting the valuation of a local plant, possibly that may be the case in some courts, but I am sorry to say that I have not the same amount of confidence in all the courts. As to the New York Commission, recently deceased, I know it was not so, and he knows it was not so if he will stop and reflect a little. In the New York Consolidated Gas case evidence was brought in by the experts against the Company as to the value of plants some of them 3,000 miles away, and when I went in to testify against that evidence, to show the inapplicability of some of it, I wasn't allowed to testify on any of those places. Outside of the record one member of the Commission asked me to favor him with a copy of my rather elaborate tables prepared for use as evidence, making the statement that they would be, no doubt, of great value to the Commission; but, notice, this was to be outside of the evidence. Mr. Carter also remarked in regard to the history of a plant commending itself to the court. It should. That lies at the very basis of what I am trying to urge in this whole matter, but if that history is not a correct history it is of no value, or worse than no value. If such a company as his can go back for 30 years or more, and show a correct history, and show the values as they actually existed it is of commanding importance. Now I still prefer to differ with Mr. Carter on the question of the difference between depreciation and contingency reserve. We differ on very few points, as Mr. Carter knows. I contend that, on the very point of exactness in accounts, as to which he is properly so particular in emphasizing, we should distinguish between the two. There is, of course, a very essential difference between depreciation and the reserve held against contingencies which may or may not materialize. We know that depreciation will materialize. We know that year by year there will be an item of cost for depreciation; we are not so sure as to the item covered by contingency reserve. That might be regarded as a cushion between cost plus return on our investment and price charged per 1,000. I want to say a word or two about Commissioner Barker's criticism. I am not quite sure whether I took in his criticism accurately or not, but what I really understood was he thinks this subject ought to be treated from a practical standpoint—that I have not been so treating it, but that I have been treating it from a theoretical standpoint. I suppose in that case that my 30 odd years of practical experience is to be wiped out, and that my experience of 5 years as a college president makes me a theoretical man and disqualifies me from being a practical man.

Com. Barker—Oh, no; nothing of the sort. I would be the last man to suggest any such thing. I think what I said was this: That the paper showed a marked contrast between the method of approach of the purely theoretical man and the man who combines both theory and practical experience, as Dr. Humphreys certainly does. [Applause.]

Dr. Humphreys—I will take it all back, Commissioner Barker.

Com. Barker—I tried to make myself clear, but if I conveyed any such impression as that I am very sorry. I did not intend to.

Dr. Humphreys—The fact is, evidently I did not understand Com. Barker. I thought he was making the suggestion that my paper was purely a theoretical discussion of the subject, and it would have to be considered from that standpoint. It must, of course, be considered as a business question, and if you will refer to pages 46 and 47 you will find I have done so. We must take up and consider every phase of the matter when we are considering the question of depreciation; namely, from the standpoint of the constructing engineer, the operating engineer, the man of business, finally that of the accountant. I would like to refer once more before I close to the question which came up as to the use of terms. I quite agree with the gentleman who objected to doing away with the term "depreciation," and, on the other hand, I do agree to a certain extent with the idea of employing terms which could be more easily understood. In my lectures to the Stevens' students I am very apt to push "depreciation" aside as much as possible, and to lead the young men to appreciate that after all depreciation and repairs or maintenance are firmly bound together, and that they cannot be separated. I rather divide up the subject under these heads: Repairs, and current renewals and deferred renewals—as, for instance, the refilling of retort benches—and final renewals, the last being what we would ordinarily call "depreciation," but I try to treat the whole subject of wear and tear and depreciation under the heads just named, and I use these terms a great deal more than I do depreciation; but I also define depreciation in connection with the terms I more often use, because the student must be prepared to know what the term depreciation is supposed to cover. I thank you, gentlemen, and apologize for taking so much of your time.

The President declared the meeting adjourned until 10 A.M. the following day.

(To be Continued.)

[Continued from Page 934.]

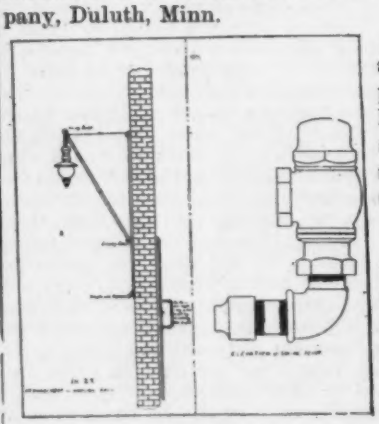
The Wrinkle Department.

[Prepared for the Second Annual Meeting of the American Gas Institute, by MR. M. R. BUMP, Editor.]

No. 33.—*Tabulation of Discharge Through a Two-Inch Diameter Diaphragm.*—Several years ago Mr. McDonald, of Louisville, gave the results obtained by using a diaphragm with a small orifice in measuring the output of his plant. In order to obtain a set of figures for daily use a $\frac{1}{16}$-inch thick diaphragm with a 2-inch diameter hole was inserted in the outlet of a relief holder. A U-gauge was connected up to openings drilled about 1½ feet on each side of the diaphragm, and scale attached which could be read to tenths of an inch. Repeated observations were made on the flow at from ¼ to 3 inches differential pressure, 20,000 feet of gas being used for each observation, the final results being the average number of readings. These results were plotted and a curve drawn, which was extended up to 8 inches by using the figures already obtained, together with the usual formula. The following table gives the flow in cubic feet per hour of one opening. Should continuous readings be desired, a recording gauge could be used. Additional holes should be used whenever the loss of pressure becomes too great.

Tenths Inches.	Cubic Feet Per Hour.	Tenths Inches.	Cubic Feet Per Hour.	Tenths Inches.	Cubic Feet Per Hour.
10	4,500	34	8,300	58	10,800
1	4,700	5	8,400	9	10,900
2	5,000	6	8,500	60	11,000
3	5,200	7	8,600	1	11,100
4	5,400	8	8,700	2	11,200
5	5,500	9	8,900	3	11,300
6	5,700	40	9,000	4	11,400
7	5,900	1	9,100	5	11,500
8	6,000	2	9,200	6	11,600
9	6,200	3	9,300	7	11,700
20	6,400	4	9,400	8	11,800
1	6,600	5	9,500	9	11,900
2	6,700	6	9,600	70	11,900
3	6,800	7	9,700	1	12,000
4	7,000	8	9,800	2	12,100
5	7,100	9	9,900	3	12,200
6	7,200	50	10,000	4	12,300
7	7,400	1	10,100	5	12,400
8	7,500	2	10,200	6	12,400
9	7,600	3	10,300	7	12,500
30	7,800	4	10,400	8	12,600
1	7,900	5	10,500	9	12,700
2	8,000	6	10,600	80	12,800
3	8,100	7	10,700		

Nearest even hundreds used.—C. W. ANDREWS, Zenith Furnace Company, Duluth, Minn.



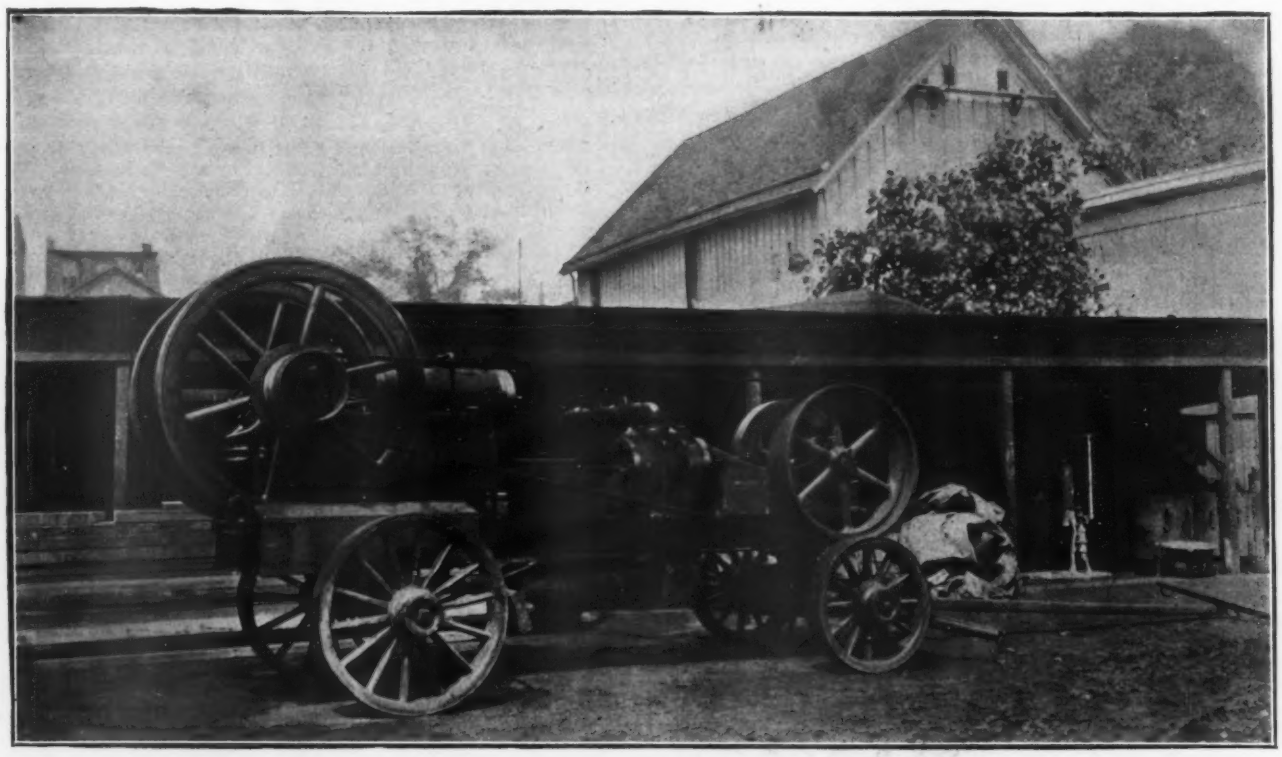
Wrinkle No. 34.

No. 34.—*Arrangement for Hanging Arcs.*—This plan consists in a pair of swing joints so that the lamp may be lowered for cleaning and maintenance.—GEO. W. THOMSON, Suburban Gas Company, Chester, Pa.

No. 35.—*Portable Outfit for Testing Large Mains.*—The outfit consists of a 12-horse power gasoline engine belted to an air compressor; the whole outfit, including truck, is about 4½ tons.—C. L. DAY, Peoples Gas Light and Coke Company, Chicago, Ills.

No. 36.—*Industrial Installation for Melting Wax.*—This installation consists of a water heater and piping system for melting wax in lithographic and similar establishments.—F. C. SHEPARD, Minneapolis Gas Light Company.

No. 37.—*Industrial Installation for Melting Glue for Sash and Door Factories.*—This installation consists of water heater and piping sys



Wrinkle No. 35.

tem, as shown in the accompanying photograph.—F. C. SHEPARD, Minneapolis Gas Light Company.

No. 38.—*Method of Supporting Service Pipes.*—The object of this plan is support service pipes while a trench is open or after back filling, in order to prevent trapping the pipe.—GEO. BEADENKOPF, Consolidated Gas, Electric Light and Power Company, Baltimore, Md.

No. 39.—*Test Plug for Main Testing.*—This plan is to use the ordinary soil pipe plug used by plumbers which has an expanding rubber ring. It is simpler to handle than the ordinary cast iron plug, which must be put in with rope.—GEO. BEADENKOPF, Consolidated Gas, Electric Light and Power Company, Baltimore, Md.

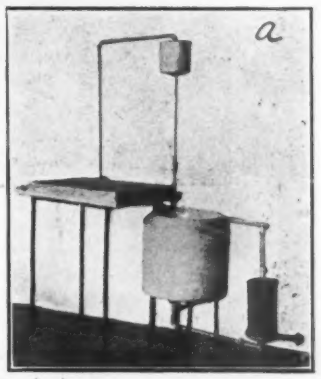
No. 40.—*Display Room Fixtures.*—One is a revolving post for displaying gas brackets, and the other a series of swinging shelves for displaying hot plates and small burners. They are both designed to minimize space required.—VERNON K. GOULD, Bangor (Me.) Gas Light Company.

No. 41.—*Lead Pipe Cutter.*—The accompanying sketch shows the plan of a hand operated lead cutter that has the advantage of great capacity and does not flatten the pipe at point of cut, as the knife is very thin and sharp. The reel is arranged with 4 spokes, on one side shorter than the 4 on the other side, so that after removing the reel a coil of lead pipe can be slipped over the 4 short spokes.—C. L. DAY, Peoples Gas Light and Coke Company, Chicago, Ills.

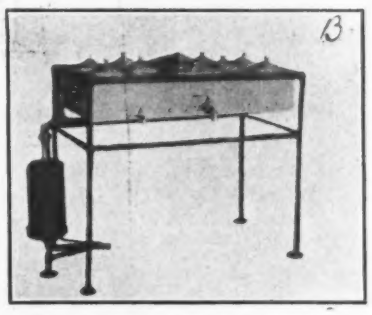
No. 42.—*Pipe Testing Rack.*—When laying a 12-inch wrought iron high pressure line in Chicago, leaks were found after putting a pressure of 60 pounds per square inch on the line. The expense was considerable in locating the leak and in removing and replacing the imperfect pipe, and at the same time the work was delayed. In order to discover imperfect lengths before the pipe was placed in the trench an apparatus was constructed to test each length separately. It consists of 2 iron caps connected by 2 iron bars, which are drilled so that, by placing pins in the holes behind the forged cross bar, it may be used on different lengths of pipe. A piece of ¼-inch sheet rubber is fitted into each cap, and after the caps are screwed up tight the length is pumped up to 10 pounds per square inch pressure by means of a hand pump attached to a pipe leading from a tap hole in one of the caps and on which is placed a steam gauge. The pressure is left on for a couple of minutes while the men go over the seam of the pipe with soapsuds.—C. L. DAY, Peoples Gas Light and Coke Company, Chicago, Ills.

No. 43.—*Emergency Pipettes.*—The scheme shown in the accompanying sketch has been found very useful in replacing broken pipettes for either Tuttle or Orsat gas analysis sets. It often enables the completion of work that would be spoiled by the delay necessary to secure a new pipette.—R. G. GRISWOLD, Denver Gas and Electric Co.

No. 44.—*Automatic Hydraulic Main Tar and Liquor Overflow.*—A cast iron box like sketch is attached to end of hydraulic main. Openings for liquor and tar are cut in end plate of hydraulic main opposite openings in overflow box. The level is maintained by couplings attached to 4-inch pipe, which may be regulated by stem and yoke. The tar overflow is operated the same as liquor overflow, but owing to the difference in specific gravities of tar and ammonia, the tar overflow is from 2 to 3 inches lower than liquor overflow. A small stream of tar and liquor is constantly running from overflows. The tar coming away from hydraulic constantly does not become thick and pitchy.—H. E. MANN, Cleveland Gas Lt. and Coke Company.

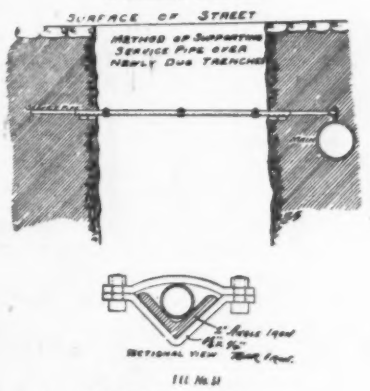


Wrinkle No. 36.



Wrinkle No. 37.

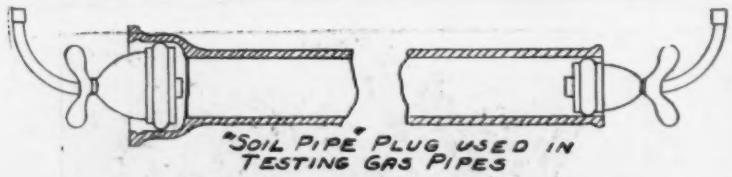
No. 45.—*Damper Valve for Street Mains.*—This valve is used for partially closing off gas feeder mains in certain districts of high pressures in order to use enough pressure on the trunk mains to give good service in outlying poor pressure districts. In the average case it can be set for the load conditions and run without attention for some time.—CHAS. S. BEARDSLEE, Cleveland Gas Lt. and Coke Co.



Wrinkle No. 38.

The following wrinkles were compiled by the Editor from various bulletins and letters of instruction to operators, written by Mr. Henry L. Doherty:

No. 46.—*Method of Improving Workmanship of Fitters and Meter Men.*—"A good plan of improving the service of these departments is



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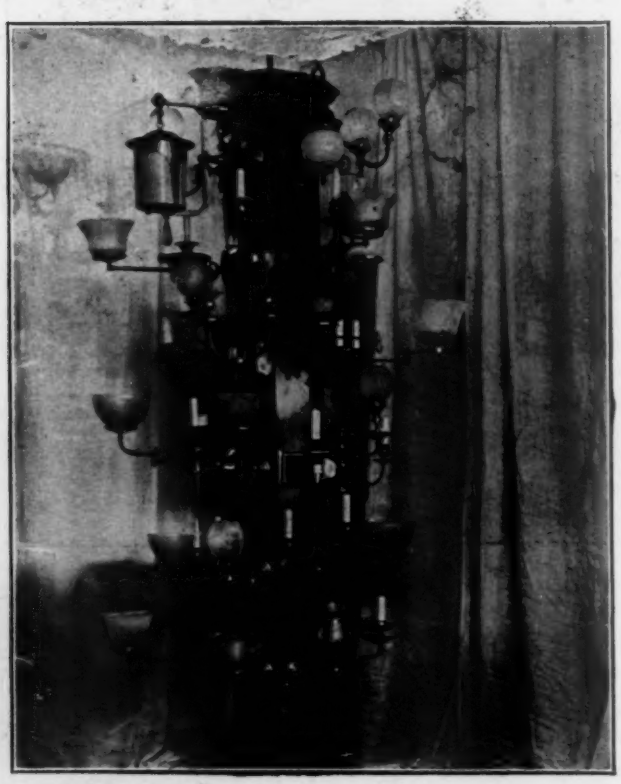

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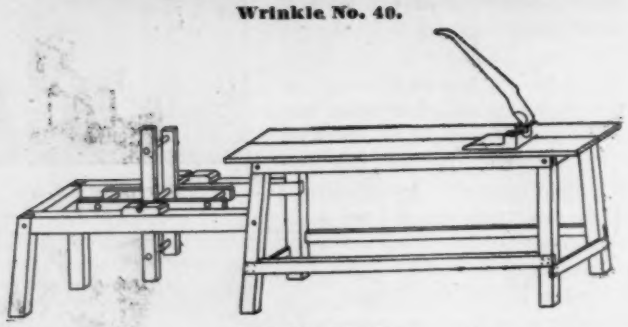
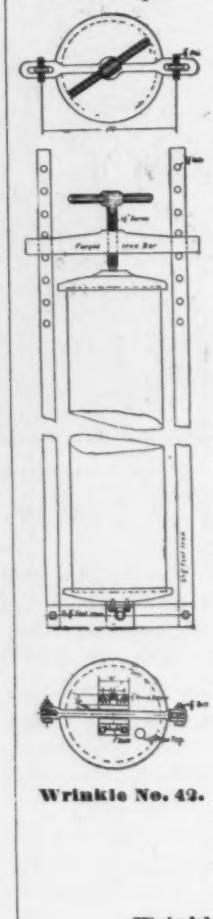


Wrinkle No. 41.

to have a bulletin board in the shops and post daily and monthly the number of orders executed by, and the number and nature of mistakes and faults found in the work of each man, and endeavor to instill a rivalry between the different men in making a record for quantity and quality of work done."

No. 47.—*Using Large Meter as Test Meter in Laboratories.*—"A very handy arrangement for use in laboratory or other test work consists in extending the test dial of a 20-light meter and putting on a large needle of 6 or 8 inches diameter. The dial for this needle should be made of glass so that the other dials can be read and a rubber band should be lightly stretched from the extended shaft to the edge of the dial to prevent any back lash caused by the large needle. This meter is very satisfactory for any work except refined chemical work, for which an aspirator or wet meter should be used."



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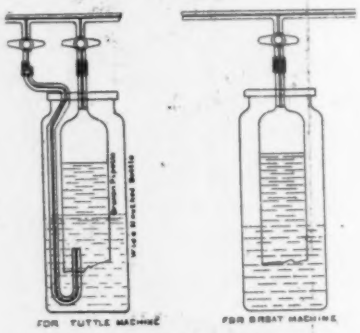

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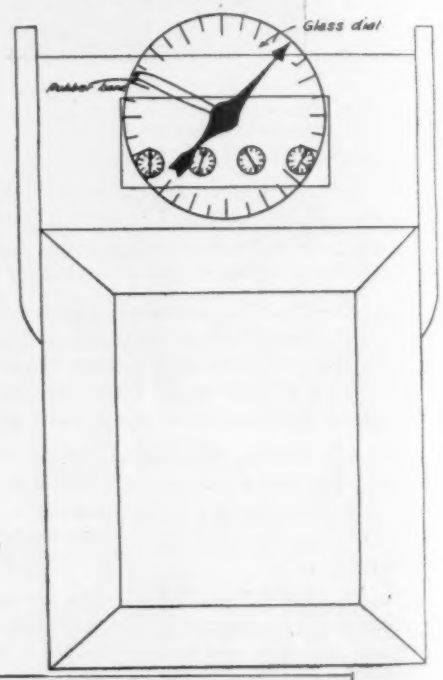
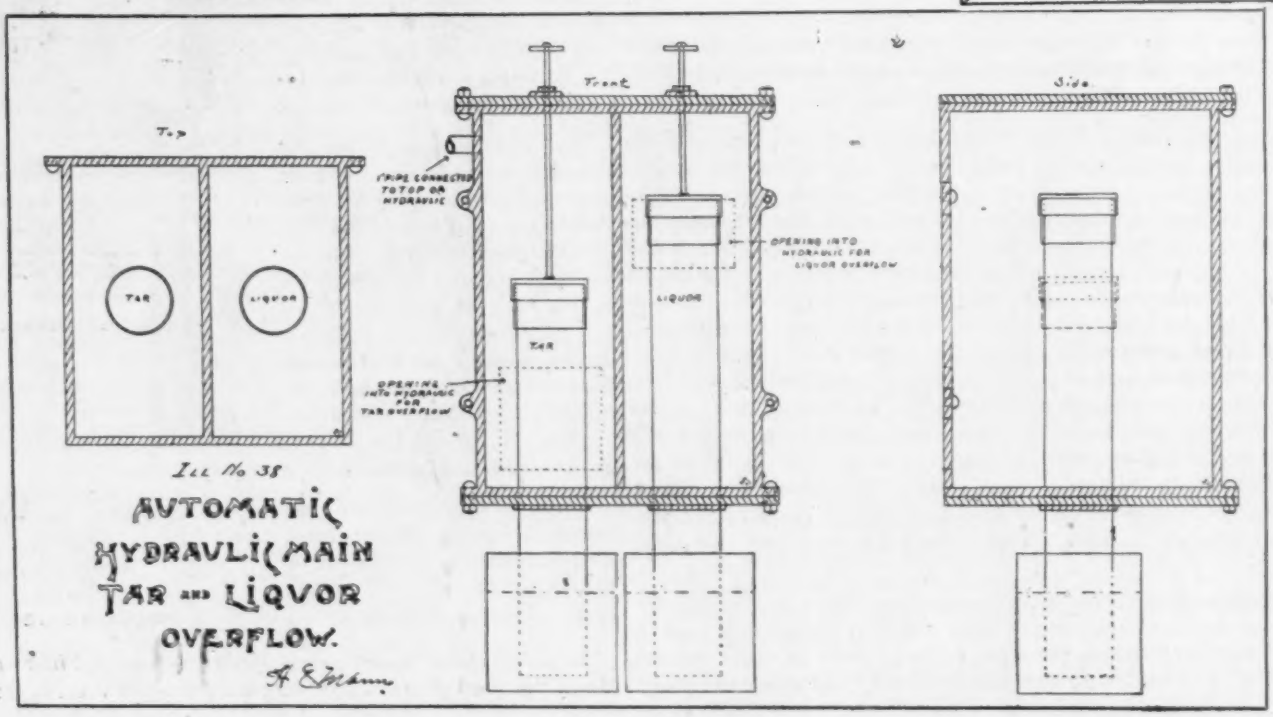


Wrinkle No. 47.



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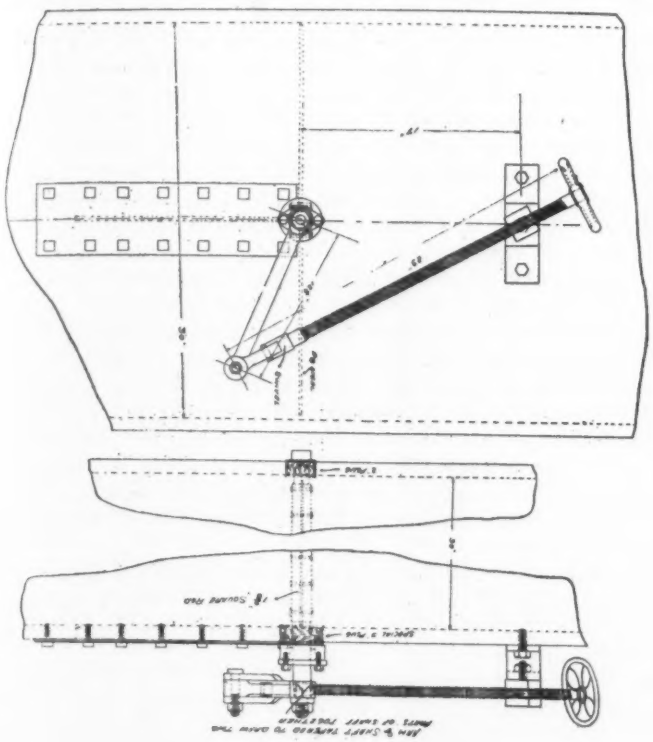

Wrinkle No. 45.

(To be Continued.)

[Continued from page 937.]

PROCEEDINGS, FIFTEENTH ANNUAL MEETING, MICHIGAN GAS ASSOCIATION, HELD IN BATTLE CREEK, MICH., SEPTEMBER, 1907.

Second Day—Morning Session.

The President announced that those interested in the next place of meeting should see Mr. Olds or Mr. Blauvelt, after which the Secretary read several telegrams.

Mr. Gimper's Recital.

Mr. Butterworth—I notice that Mr. Gimper, of Galveston, Tex., is here as a guest. I think he ought to talk to us a few minutes. He has been in the gas business longer than any of us.

Mr. Gimper—Mr. President and gentlemen: It gives me great pleasure to meet with you. Your Association is well and favorably known all over the United States, to which I am sure I can now testify personally. I noticed particularly in your President's address something about your educational work, and what the Ann Arbor Gas Company has done in the matter of a testing works for testing your coals, gases and so forth. This is particularly interesting to me, because in the latter part of the 80s, I had the honor of reading a paper before the Western Gas Association upon the condition of the gas engineer, in which was mentioned the point that we had not yet obtained the quantity of gas out of the coal that we should have. I stated then, and I do not know that I will back down thereon now altogether, that we should get 7 feet from a pound of coal. When I consider in the distillation of the coal, how much fixed product is produced in your retorts, I am satisfied we do not get the proper results from the hydrocarbons in the coal. Therefore, your new testing plant is a thing in which you can improve on the quantity of the gas from a pound of coal. We have reached, in the purification and other processes, to very advanced stages, but we certainly have not secured all there is in our coal in the shape of gas. I am glad to say the Michigan Gas Association has accomplished that which no other Association has done in the United States, namely, established a testing plant for experimental work in Ann Arbor; and the credit for these is due to your liberality and to that of the Ann Arbor Gas Company. Mr. Butterworth said to me yesterday I ought to say something about the past as compared with the present. I do not know that I can take up your time for that. I would require too much of it should I tell you of the little arches we used to have, with only three small retorts in them, and that when we charged 150 to 200 pounds in them we thought we were doing well; and, then, our furnaces consumed half the coke that we ran. When we got 4 feet to a pound of coal we thought we were doing well. We had all kinds of troubles in those days, and we got more when we tried steam jet exhaust. Many of you do not know anything about that, for times have changed wonderfully. Naturally the business management and solicitors, etc., were unknown to us at that time. We now want highly educated men. If you will pardon me for referring again to my paper I had only three advocates (Messrs. A. C. Humphreys, E. McMillin and A. E. Boardman) for that paper. The London *Journal of Gas Lighting* and the American Gas Light Journal favored it. But how was this education to be brought about? You have accomplished it. Your Association has brought it to the point. I thank you very much. [Applause.]

The President—On behalf of the Association I wish to thank Mr. Gimper for his very nice talk, and hope we may reach that height of perfection, 7 feet. I think we can get that right here in the meeting if we talk long enough about it. The first paper on the programme this morning is that by Mr. W. S. Blauvelt, of Detroit, Mich., on

A BRIEF RECORD OF PROGRESS IN FUEL BRIQUETTE MANUFACTURING AT DETROIT.

[For the text of Mr. Blauvelt's paper, see Journal, Sept. 23, p. 534.]

Discussion.

The President—This excellent paper is open for discussion. Mr. Blauvelt will gladly answer any question. He has passed a few of those briquettes around, and you can see how they look.

Mr. Butterworth—At what price does the Solvay Process Company propose to sell this fuel in Detroit?

Mr. Blauvelt—That question has been discussed somewhat. Of the two views, one to sell at a price proportionate to its fuel value, the other to sell at a price low enough to immediately secure a market, we came to the conclusion that our practice in selling coke for domestic use should be folowed in marketing briquettes; namely, that we should sell them at a price at which we could sell our production, and we believe the quality of the goods is such that in a comparatively short time the demand would increase to such an extent that, being greater than the supply, the price would go up until the relative price between anthracite and briquette would be practically based on the relative values of the fuels. At the present time they are being retailed at $5 a ton. Based on the relative fuel values, there should be a difference of about 50 cents a ton between them.

Mr. Douglas—Is there any tendency to clinkers in the burning of briquette?

Mr. Blauvelt—The tendency to clinker is based entirely on the kind of coal used. If briquettes are made of a very friable coal or coke, clinkers may be produced in a very hot fire. As all the material used in making briquette is disintegrated, there are, of course, no large pieces of slate in the ashes. Less clinker seems to be formed in burning the briquette than in burning the raw materials of which the briquettes are made.

Mr. Butterworth—About what per cent. of ash is in the briquette that you make?

Mr. Blauvelt—Between 11 and 14. It varies somewhat, of course, with the coal used. It runs just about through the same range as ordinary anthracite.

Mr. Little—In Montreal, Canada, the engineer in charge has installed a plant for making briquettes. It was not in operation when I was there, but I expect it is now.

Mr. Blauvelt—The Montreal briquette is the same in form as that made in Detroit, but it is larger in size.

Mr. Lloyd—Mr. Blauvelt, what is the relative amount of attention required as between the briquette and the coke fire. Has he any more argument in advocating its sale?

Mr. Butterworth—Many say how difficult it is to kindle and start a fire.

Mr. Blauvelt—Kindling a fire with our briquettes is a little bit slower getting started than with coke. It is very much quicker than anthracite. The position is intermediate between the two. Regarding the attention required in firing a common sized furnace with anthracite, coke or any other intermediate fuel, burning at the rate of so many pounds of carbon per hour, the attention required, providing it does not require poking, is almost inversely in proportion to the specific gravity of the fuel used. These briquettes are not as dense as anthracite, but are a great deal denser than coke. The result is the attention required is a trifle greater than that given to anthracite. You have to coal up oftener. They require no more poking or shaking, and you coal up less frequently than with coke.

The President—About what proportion approximately do you use of coal tar pitch?

Mr. Blauvelt—The percentage varies greatly with different coals. Certain coal, mainly lignites, are successfully briquetted without pitch. There are others that only use 3 per cent. and still others that go as high as 10 per cent. We have found in Detroit 8½ per cent. to 9 per cent. of coal tar pitch gives the best briquette, when we are using a mixture of coal and breeze. We have found it desirable using about twice the weight of coal as of breeze, so that in 100 tons of briquettes there are roughly, 9 tons of pitch.

The President—Do you know anyone who has had experience with the briquettes in the manufacture of water gas?

Mr. Blauvelt—I have been told that the United Gas Improvement Company has had some experience. I do not know anything about that personally.

The President—Has anyone information on that? Mr. Eaton, do you know whether the United Gas Improvement Company uses any briquettes in its manufacture?

Mr. Eaton—I do not happen to have the data.

Mr. Blauvelt—I think it has merely been experimental.

The President—About what proportion of briquette do you have to discard as not being of perfect shape or proper size, or that would not go to the consumer?

Mr. Blauvelt—That depends largely on the skill of the operator and to their attention. In our first experiments we thought it was going pretty well if 60 per cent. proved satisfactory. Now, unless we get over 95 per cent. we think we are doing badly. I hope it will come up to the point where 97 per cent. to 98 per cent. of the total material fed to the presses will come out merchantable briquettes. I think we can reasonably expect that, then the fine stuff screened out will be returned to the press, so that there will be no loss.

Mr. Sinsel—How long after firing up is an excessive amount of smoke given off by briquettes?

Mr. Blauvelt—Really no excessive amount of smoke is given off. Smoke will appear for from 2 to 15 minutes possibly, according to the amount of green briquettes put on the fire at once. If you put on a few only, the smoke ceases.

Mr. Lea—Have you knowledge of the lampblack briquettes. I understand the Company at Los Angeles, Cal., seems very well pleased with its attempt to introduce lampblack briquettes, and that it makes very good fuel. Although the condition there is somewhat different to that of ours, it might be correspondingly good for many other gas companies.

The President—As a commercial proposition, it certainly would not pay a company with the small amount of breeze we have to go into the manufacture of briquettes, considering the capital invested?

Mr. Blauvelt—That depends largely upon the tar and breeze markets. Conditions, as we found them a few years ago, were that we had to burn part of our tar in order to dispose of it. We could not get enough out of the breeze to pay for handling and freight. In our own works we could not afford to use breeze under the boilers, since we did not have enough of it to fire more than 1 or 2 boilers. If we fired 2 boilers with it we would have to put in two extra boilers, because we could not burn it nearly as fast a free burning coal. It is questionable whether a plant producing 30 tons daily would be profitable.

Mr. Butterworth—Mr. Blauvelt, do these briquettes hold their shape, or do they show any tendency to disintegrate, or to make dust and dirt after being stored in the cellar for several months?

Mr. Blauvelt—Here (showing) is a briquette made 2 years ago or more, that was delivered to a consumer's cellar, where it remained until a few days ago. Its shape is practically as good as when it left the machine. If the briquettes are up to standard, there is no breakage with ordinary handling.

Mr. Butterworth—Does it soil the hands?

Mr. Blauvelt—A little.

Mr. Lloyd—I think more than an ordinary vote of thanks is due to Mr. Blauvelt, not only for the paper but for the information he gave us in its discussion.

The President—With the consent of the Association, I will extend the thanks of this convention to Mr. Blauvelt for his paper. Some of us do not realize what this has cost; Mr. Blauvelt does.

Mr. William Seymour, Assistant Superintendent, of Grand Rapids (Mich.) Gas Light Company, then read his paper on

A NEW METHOD OF CONDENSING AND SCRUBBING.

[For the text of the Seymour Paper, see JOURNAL, Sept. 23, 1907, p. 531.]

Discussion.

Mr. Traver—I do not know that I can say much on this particular subject, as the work is simply a report of work we did on these coolers and we were pretty well up against it for condensing surface. The cooler was originally designed to take advantage of the difference in the temperature between air to water, water to air, and water to gas. From all the data we could possibly get hold of in "Kent," and others, we found the transmission between air to water between diaphragms was about 150 feet, and this cooler was originally designed for that transfer of 150 per square foot for the degree difference. Of course we had too small an amount of cooling surface (about ½ in that case), still the coils being in pretty good shape did pretty fair work at first, much better than in any other form. Now we are starting to put in condensers designed right here and getting this apparatus in shape. Surely this opens up a pretty live question on account of the small cost of the vessel, even if we have a transfer of only 40° when we get down the cost to one-fortieth of ordinary condensers. I think we can get lower than that if we find some conditions that are different. We ought to get 150° possibly, if we get our conditions right, possibly due to the design of the condenser itself, and the rate of water passing over the diaphragm.

The President—A number of manufacturers here are designing condensers. I should like to hear from them and I believe the convention would. Mr. Lloyd, I believe, has put out a condenser very much like the one in question.

Mr. Lloyd—I find myself considerably at a loss to intelligently formulate a discussion of this paper. I take it that courtesy to the writer precludes bringing into the discussion any comparisons, except the basis therefor is to be found in the paper itself. While the paper is interesting, as showing the progressive action as limited to two constituents of the raw gas, I find few definite statements. We are told that the rate of make was about 65,000 cubic feet per hour, or approximately 1½ millions per diem. Also, that the cooling coils comprise about 480 feet of 1¼-inch pipe, plus 64 return bends. The size of the compartments is not given, and accordingly the machine cannot be compared with ordinary condensers and scrubbers of the same cubical content or weight of metal. The inference from the opening statements, I take it, would be that this washer presents a new method of removing the impurities of tar and ammonia, and, in lesser degree, the other impurities that come out with them. As a matter of fact the exposure of hot gas to water for the purpose of both cooling and eliminating tar is not at all new, neither is the pumping of liquor through cooling coils. The precise arrangement of apparatus is certainly novel, but it would seem to present some practical disadvantages. Very few men care to carry all their eggs in one basket, especially if it is a case of many eggs. In this case it is equivalent to eliminating any by-passes from the condenser inlet to the scrubber outlet, in fact, equal to connecting the shells for that purpose straight through nozzle to nozzle. How far this would meet with approval is, perhaps, a matter of individual acceptance. It also appears that, with any less quantity of water than 2½ gallons per 1,000 cubic feet, the loss of ammonia was 1 per cent. or more, and that it was not until about 2¾ gallons per 1,000 had been employed that the loss was reduced to such practice as would be expected to pertain with a first-class device. "Hughes & Richards Handbook," page 161, gives 10 gallons of water per ton. "O'Connor's Handbook," page 196, for tower scrubbers, 10 to 18 gallons per 10,000 cubic feet of gas. These, of course, are very large tower scrubbers. "Hornby," page 107, 10 to 12 gallons per ton. These should be doubtless read as long tons. There, then, we have about half the quantity of water required in this apparatus, necessarily resulting in a weaker liquor, requiring a larger concentrator, larger storage capacity and lesser yield, so that what is gained at one point is, in a measure, lost at another, while all will have to be taken into account in the financial balance sheet. The inlet quantity of H_2S is given at 470 grains per 100 cubic feet of gas, the quantity at the outlet at 380, a drop of 90, or a margin over 19 per cent. absorption of H_2S through the machine. This is not at all an uncommon absorption by a good submersion washer. The absorption of other constituents is not given, nor are we told whether any tar has been extracted prior to the entrance of the gas into this machine, but, as the entering temperature is given at from 111° to 97°, it should appear that some previous apparatus, for either eliminating tar or reducing temperature, had been employed, as certainly the gas would come from the exhauster, under ordinary conditions, at a higher temperature than this. In fact, it is about the outlet temperature at the P. & A. tar extractor, so that we may assume from the paper, I think, that the apparatus displaced are the condensers, washer, scrub-

ber and connecting by-passes. In fact, it would seem to me that, unless the tars were substantially all removed prior to this machine, there would be liability to serious operating troubles. The by-pass connections and valves are a very considerable proportion of the cost of ordinary apparatus, but to my mind are invaluable parts; likewise, but in a lesser degree, I would not concentrate all of the work in a single apparatus. The first conclusion of the paper, I think, is, perhaps without intention, rather misleading, because if it appeals to others as to me, the inference would be that this method requires only about $\frac{1}{4}$ of the apparatus commonly employed for the purpose of effecting equal results. I hardly believe the writer would desire that impression to be accepted. The second, that it makes a very efficient scrubber, may, I believe, be judged from the figures I have quoted. The third, that it is easy to clean, is possibly correct, but I would at least point out that, if the circulating liquor is heated to a point to dislodge the napthaline that may accumulate, it hardly seems it would at the same time efficiently take out ammonia, and it is obvious that, with all the works in one machine with no by-pass, it is not possible to open it up, should it be necessary to have access to the interior for any reason. I should like to inquire if there be not some relief apparatus which serves at such time. A further point on which I think information should be given is the quantity of tar which goes through the machine as this would certainly be in very intimate solution with the liquor, and require considerable period of settling to displace it; also the quantity of water which it is necessary to pump through to reduce the temperature of the cooling coils. To arrive at an accurate determination of the value of the appliance, I should say that the analysis of the entering and leaving gas should be complete; the cost should be figured against apparatus of equal efficiency and limitations, and the relative space occupied and labor cost involved in operation over a reasonable period, be given.

The President—We will hear from Mr. Tippy.

Mr. Tippy—The conditions in our condensing plant right now are not as they should be. Two of those washer-coolers are used instead of one. The first one was to cool the gas, the second to take out ammonia. I imagine, in the tests given, where the entering gas is at 100°, if it had been cooled at the start it should have been down to 75° to 80°, which would have required much less water to have taken out the ammonia. I think it would figure out an efficient scrubber device, because the scrubber surface is in the circulating water. As pointed out in the paper, the original condensers were not adequate, and we are right now face-to-face with the problem of putting in condensers that will. One of the problems in these condensers will be to get them so that they can be readily cleaned, because this circulating liquor carries naphthaline, and fills up around the top of the ordinary condenser very quickly, and you have to steam this out. The second washer-cooler is badly stopped up with naphthaline and will have to be taken apart and cleaned in some way. We expect to put in, while we are fixing the plant up, some reverse connections so that we can put that on first, and have the present one cleaned, and we hope that will clean out the naphthaline. Another problem to be considered is the cost besides the first cost of the investment, and that is the cost of circulating this water. In the ordinary old style condensing plant you did not have to pump that water over and over again, and we see that is a considerable item of expense which will entail a considerable investment that I have not figured out.

Mr. Butterworth—How much per thousand?

Mr. Tippy—I could not say just now.

The President—I asked Mr. Lea to discuss this paper, but he has not had much time to read it over. Mr. Lea has had much experience with condensers because he was in Detroit when we started the new condensing plant, and I can vouch for the fact he had a lot of it there.

Mr. Lea—I suppose a great deal is known about the operation of these washers that does not appear in the paper. It is not safe to say that this paper, or that the result shown here, is conclusive. They are not conclusive either way. It has outlined the fact that our ordinary condensers and scrubbers are not what they should be, and we won't have to go very far ahead to improve on the old results. It is also, perhaps, an undisputed fact that the idea of using water for the transfer of heat to water is a good thing in its lf, and that has been shown conclusively in the operation of gas producers in England, not for just such work, but the scheme in general has been shown in the large towers and in the pumping over of water. One feature striven for, I take it, in this design, is the *fractional* condensation of gas, and that certainly is in the right line. Where we have a condenser that will *fractionally* condense our gas and remove the products from the flow of gas as soon as condensed, then we will be doing some business, and this offers some possibility in that way; but I cannot see the result shown up-to-date would warrant anyone in making any very positive statement, either for or against the scheme. We might argue for or against this particular installation, but there may be some mechanical difficulties that will have to be overcome. The general scheme has good points. We might say that the failure of the Mond's gas plant in England would indicate that this scheme would not work, but that does not follow, because the failure of Mond's scheme was not due in any way to the condensing method. I would say, if the Michigan Association could get exhaustive tests, the showing would be a mighty good thing to have, not with a view of advocating anybody's type of condenser, but just with a view of finding out what can be done when you are transferring heat from water to water, and take advantage of the *fractional* condensation. I think we are going to improve on all present forms of condensers, and there are some things in this that I think should be followed up and studied more thoroughly before we say for or against it finally. [Applause.]

The President—Mr. Blauvelt I believe is installing a condensing system, therefore he could give us some valuable discussion on this.

Mr. Blauvelt—I was flattering myself I was going to come in about last until I heard the discussion up-to-date, and then I did not know but I had reached the point where I did not have anything to say. The paper is an interesting one. The principles involved in this washer-scrubber are generally so well known, that the astonishing thing to me is that somebody had not tried the method years ago. The efficiency of this general type of apparatus, where cooling liquor flows down through the tower and comes into intimate contact with ascending warm gas, was very clearly shown by Mr. Humphreys, in his paper on the Mond gas producer plant, which was published something over 10 years ago, in the "Proceedings" of the Institution Civil Engineers. The tower used there was 12 feet in diameter, and in it the gas was cooled from 180° F. to 151° F. The circulating cooling liquor entered at 122° F., and was heated to 176° F., so that the liquor leaving the apparatus was only 4° cooler than the temperature of the gas entering, which shows that, given a suitable cooling system for the liquor that is being circulated, probably this scheme will give a more efficient method of cooling gas than any other scheme that has been used. As far as the scrubbing results are concerned, I agree with Mr. Lloyd, that the reports of this test do not show up as remarkably efficient. The quantity of water used is higher than is used in certain other well known types of scrubbers; but with more efficient cooling, as Mr. Tippy pointed out, undoubtedly the ammonia recovery would be accomplished with a smaller expenditure of water. Mr. Seymour does not give full information in his paper as to the amount of water actually circulated, as to the size of the apparatus, or as to its ultimate capacity. The results obtained regarding the transfer of heat from water to water through a thin iron tube, were not what would be considered very good, but they are as good, I think, as could be reasonably expected when the cooling coil is submerged in a small tank through which the velocity of the water is comparatively slow. All of the authorities on cooling liquor while passing through a tube over the outside of which cooling water flows, indicate that the velocity of the liquor circulating in the tube, and of the cooling medium outside of the tube, is a very important function, and the velocities must be fairly high to secure a high cooling efficiency. A series of tests were made and published some 6 months or a year ago—just where I cannot say—which brought out very clearly the wonderful increase in cooling efficiency as the velocity of the two liquors increased. It seems to me one weak point in this system is that the cooling coils are submerged in a tank in which the circulation is somewhat slow. If the ordinary coolers used in refrigerating plants were employed, where the liquor is circulated through pipes, over the outer surface of which the cooling water flows in a thin film, I think the efficiency would be greatly increased. This plan is also better than the plan shown, in the apparatus described, in that it is possible to clean out the accumulation of naphthaline, which is inevitable in the inside of the pipes. Some experiments were carried on nearly a year ago where we circulated ammonia liquor, cooled it to a very low temperature, and returned it to the scrubber. We got a very strong ammonia liquor and got a very high efficiency of cooling for the first day, but the third day we did not get any cooling at all, and when we came to investigate, we found that on the inner surface of the tubes through which the liquor was circulating, there was a thin coating of naphthaline which proved an excellent non-conductor. Now, with the apparatus described at Grand Rapids, it is evidently

impracticable to steam the coils quickly unless you draw off the liquor. With an apparatus arranged for taking off any section and shooting steam through it, you could clean it readily which would be a great advantage. In the last part of his paper, Mr. Seymour touched upon the difference in the cooling efficiency between the sections where the gas ascends and those where it descends. A moment's consideration will show you cannot hope to have high efficiency of cooling where the gas and the cooling liquor are travelling in the same direction. I am under the impression that if you were to determine it carefully, you would find with 6, and possibly even with 5 compartments, in which the gas rises, and the liquor descends, there would be more cooling than in 8 sections in four of which the gas descends. This brings us to the point Mr. Lloyd also brought out that in the apparatus as designed you cannot by-pass one section. Would it not be a great improvement to have outside connections between those sections, having them of lead from the top of one compartment to the bottom of the next, with a by-pass all the way around the apparatus so that you could cut out any section at any time, steam it out and have a higher efficiency which will be always obtained by passing gas up and the liquor down? The general scheme is one which seems of sufficient value to warrant a very careful investigation. If with this device we should secure as good ammonia recovery efficiency as with some of the well known types of scrubbers now in use, and if we can utilize the well known high efficiency of cooling by the intimate direct contact of cooling liquor with the gas, with no bad effect upon its illuminating power, and if the capacity of the apparatus is large in proportion to its cost, there is no doubt it is a good thing. A good many "ifs" are there, but we have not the information at the present time to determine whether they are going to be cut out of the argument. So it seems to me, as Mr. Lea says, we have not near enough data to go on, to state anything definite, merely that this is an extremely interesting subject to work on. We should get some definite results I think, within another year. [Applause.]

The President—When do you expect to have your condensers in?

Mr. Blauvelt—We hope some time in the course of a month or so. We were very much disappointed that we could not get this apparatus in service in hot weather, because of course the real test of such apparatus is not in the winter time when there is no difficulty in cooling, but in July and August where you have to work with warm cooling water.

The President—It seems there is an elegant field for investigation there for next year.

Mr. Traver—It seems to me to be mainly in the form of the apparatus. Mr. Blauvelt says the thing to do was to put up an arch with the gas going down through tubes through half the compartments in order to save gas. The statement that you can do more with four compartments with all the gas going up, than with four going down and four going up, I think is wrong.

Mr. Blauvelt - My statement was 6, not 4.

The President—Do you do some condensing before you get to your scrubber; in other words you have your temperature down to about 100° at the present time.

Mr. Traver—It is done in another scrubber, because when we ran up against this proposition of cooling coils being too small on top here—on account of the small space we could not get in any more—we simply utilized the condensers out of our old works. At the present time we are pumping water all over coils and leading it back to the washer-cooler through every condenser we have in the place. That, of course, is a very inefficient way of working.

The President—I should like to hear from Prof. White, because I believe this touches on the work that he has been doing on the naphthaline question and other work of condensation the past 2 years.

Prof. White - I am not quite clear how far this particular apparatus is supposed to take the place of all the condensing and purifying systems. Is the gas supposed to come direct from this washer-scrubber to the purifier? It would seem to me, from the point of view of one who has theorized, that it would be impossible to take out all the tar and ammonia in one apparatus. The conclusions we drew from our experiments 2 years ago were, that it was inadvisable to bring water containing ammonia from the condensing gas while the tar was still there, for the ammonia gas dissolving in the water might liberate naphthaline from the phenols. I judge they had no serious trouble in Grand Rapids from naphthaline.

Mr. Traver—There is a P. & A. between the exhauster and condenser. We are taking the tar out at about 150° now. Only the light tar gets through.

Prof. White—That makes a very great difference in my attitude toward the behavior of the machine. Do you intend to keep in the P. & A.?

Mr. Traver—Either a P. & A. or other form of tar extractor. Any kind of scrubber with trays won't eliminate tar. You can never get the tar all out. The thing to be desired is to have the gas enter the condenser free from tar. Whether it is a question of a P. & A. or other form of tar extractor, I do not know. As to dissolving out the phenols, if this liquor is used over and over again, as it is, that soon becomes saturated, I should think, but I believe that effect after a little working would disappear.

Prof. White—You have a secondary condenser and scrubber?

Mr. Traver - Yes.

Prof. White - The P. & A. is supposed to go ahead of it. It is an interesting thing what the effect would be when you try to run a P. & A. at 153°, and then flow through this machine. That is what you intend to do?

Mr. Traver—We are running the P. & A. at 150°.

Prof. White - And then flow directly into the machine.

Mr. Traver - Yes.

Prof. White—Does the P. & A. take out the tar pretty well?

Mr. Traver - Fairly well. The gas comes out in this apparatus?

Prof. White - That is doing very good work. In the paper to be read this afternoon, I believe the point is touched on that the removal of tar in the ordinary form of condenser is very small, so I am interested to note how in this scrubber form of condenser the last traces of tar are removed. I rather think my discussion had better be eliminated from the minutes, because I do not think it amounts to anything.

The President—Any further discussion of this paper?

Mr. Traver—A point I forgot to correct. Mr. Lloyd said that in the different tower rotary scrubbers it took about 1 gallon of water per 1,000. I don't know any company getting down as low as that in any of the forms. All admit more than 1 gallon per 1,000. The majority of companies in this State are admitting 3 or 4 gallons per 1,000, in the ordinary form of tower scrubbers.

Mr. Sinsel—Mr. Seymour's paper is very interesting to me, and he deserves much credit for presenting it to the convention, backed up with his working data. The fact that the transmission of heat from water to water is much greater than from water to gas is a principle that all practical gas men will finally adopt in their condensing system, and it is a fact that we will adopt this washer-cooler system, letting it take its place in the condensation of gas, especially where we use it for illuminating purposes. This Doherty washer-cooler probably is an advanced idea along the washer-cooler line. Many of us, knowing this principle, have applied it oftentimes in our plants, by using some part of the old apparatus. I know in station B, in Detroit, we are passing circulating water from the hydraulic main through a cooler. It is rather a condenser-cooler through a water tube condenser, and return it to the hydraulic main, reducing the temperature of the gas at the inlet, ranging between 110° to 120°, thereby helping out our condensing system considerably. Mr. Traver speaks of the tar extractor, the gas entering there being 150°. If he would apply that principle there he could get a good increase on his condensing capacity. We are also using the tower scrubber of the type Mr. Lloyd referred to. It is filled with trays, 6 feet in diameter. We are returning the overflow water from the rotary scrubber to the top of this tower scrubber, the excess of which flows in our square washer, a section of the pump being connected with the reservoir in the bottom of the tower scrubber, and also connected with T-outlet, so we are continuously using the liquor over and over. We can all improve our old condensing system by cutting out our air condensers, as being a too variable quantity, and turning them into water condensers, which we have done. Another great help to condensing I think is, that we can put a thermostat at the outlet of the square washer—I do not think it would be practicable to put it at the outlet of the scrubber if the temperature varies too much, but put it at the outlet of the square washer—and allow the minimum of water for condensing. This will be policy where you are using much water at an excessive cost. By its use the temperature of our gas in all our vessels is the same all the time. I think that would be quite an improvement to the condensing system.

The President—I do not know exactly what the temperature of the gas is in the hydraulic main as it comes from the retort, but these are single standpipes, and I imagine the temperature of the standpipe will run to easily 500°. Mr. Russel has had some experience. What does that run at the top of your standpipe before you cool?

Mr. Russel—In a single standpipe, with a charge of 350 to 360 pounds in the retort, the temperature 10 minutes after charging will run 800° F., at the top of an 8-inch wrought iron standpipe, about 10 feet long.

The President—I asked Mr. Russel that to show the temperature of gas going into the hydraulic main must be enormous. In the station B plant it will easily run 500°, and we are bringing it down to from 100° to 120°. Just how efficiently we are running our condensers under those conditions I don't know, but it must be a very good effciency. I believe that Mr. Traver could apply that principle at Grand Rapids with success, and very cheaply, in helping out his condensing system there.

Mr. Sinsel—Another feature about this is that those older towers and contrivances that deposited lampblack and pitch, bothered us. That installation primarily was to prevent that.

The President—Mr. Seymour, do you wish to reply?

Mr. Seymour—The washer-cooler takes the place of the primary and secondary condensers. The gas goes directly from the benches to the exhauster, and through the P. & A., then to the washer-cooler, then to the boxes. Of course, the apparatus is rather crude, and had to be experimented upon to discover what was the matter, and how it would work. The experiments mentioned in this paper are of a preliminary nature, and there is much work that could be done on a washer-cooler, which we expect to do when we can. Mr. Lloyd spoke about taking out the naphthaline with hot water. When we clean the washer-cooler—we have the old condensers and scrubbers—we put that on, bye-passing the washer cooler. If we did not have the old works it would be necessary to have these in duplicate. As to steaming out the coils Mr. Blauvelt spoke about, we found, by putting steam right in or by heating up the water as it comes from the pump, it will take out the naphthaline without shutting the cold water off the condenser. It would vary a few degrees in temperature when that hot water was removed, and that did not make any difference.

The President—These are questions which I believe can be carried on with profit at future meetings. The meeting stands adjourned to 2:30 P.M.

[To be Continued.

SPECIAL ENGLISH CORRESPONDENCE.

COMMUNICATED BY NORTON H. HUMPHRYS.

SALISBURY, ENGLAND, Nov. 9th, 1907.

The Manchester Gas Exhibition.—The Calorimeter.—Two New Magazines.

In my letter dated 10th Dec., 1906, I alluded at some length to the proposal to hold a gas exhibition at Manchester during the present autumn, on the lines of the Earl's Court exhibition held in London in 1905. In commenting on the success that attended that venture, I pointed out that the large attendance was chiefly drawn from the immediate neighborhood as it could not be expected that numbers of the public would be sufficiently interested to undertake a journey of over 200 miles or so to visit the show. It follows that if the advantages secured by the gas companies serving the densely populated district that would be inclosed within a radius of 20 miles from Earl's Court, are to be fully shared by the industry at large, a similar show must be held in the principal provincial towns, and in fact wherever there is a sufficiently large coterie of gas consumers to insure adequate support. The success which has attended the Manchester exhibition, which received a swinging send off on the 23d inst., and is to be closed to-day, affords strong evidence in favor of carrying out this idea. The Manchester District Institution of Gas Engineers, and the Society of British Gas Industries have joined forces in promoting this undertaking. The Manchester District Association has always been to the fore, whenever there is anything to be done on behalf of the gas industry, and it may, without insidious comparison be acknowledged as the leading district Association. The Society of British Gas Industries, which was an outcome of the fraternization between all classes of interested parties at Earl's Court, are to be congratulated on affording such excellent evidence that they are already in full working order. With the example of Manchester before them, promoters of similar exhibitions in future will recognize that the Society is a power in the land, and will not fail to solici. their assistance and co-operation.

The enterprise also received full civic support, the opening ceremony being attended by the Lord Mayor, the Mayor of the adjoining district of Salford, and a representative gathering from the neighborhood. It should be mentioned that in the important district, of which Manchester forms the center, the majority of the gasworks are the property of the Municipal Authorities, and some of them, Manchester being a case in point have owned the undertaking from its inception. The tendency is for the best and most flourishing districts for business, to drift into municipal ownership. Where coal is cheap and the demand extensive, as is the case in the district now in view, there is a desire for acquiring the local gas works that does not obtain in less favored localities. I could quote whole counties in the South of England, far away from the coal mines and ironworks, where materials are dear, and the consumption *per capita* or per mile of main is small, the price of gas high and the rates of dividend low, that do not furnish even one instance of municipal ownership. And it is important that this point should not be overlooked when the working of companies and corporations is compared, or when the prices prevalent in Lancashire are compared with those in the South. But all this by-the-way. Let us get back to the proceedings at St. James Hall, Manchester.

The chief magistrates were not only supported by a large contingent of municipal officers, but by a strong representation of the gas industry. The ten gentlemen selected by the Manchester District Institution as Advisory Committee, and the seven members of the British Gas Industries Society appointed to a similar office, were of course present, and in addition, the Institution of Gas Engineers and the variour district Associations were represented by their Presidents and Secretaries. The opening ceremony was brief, and to the point, and the distinguished company lost no time in separating for a careful inspection of the exhibits, before gathering again at a banquet which was held at a later hour. Mr. Newbigging, in the course of an eloquent reply to the toast of "Success to the Gas Industy" remarked that "it jerks one horribly to kick at nothing," and it is difficult to find much to say about such a complete and well ordered undertaking. Everything was in full going order, the importance of proper ventilation was not forgotten, being taken good care of by means of revolving fans fitted in the roof, and all that zeal and experience could suggest, in the direction of successful results, has been done. The Official Catalogue is a substantial 8 *vo.* book, comprising 160 pages, including in addition to a full description of the exhibits, some details concerning the objects of the two Societies concerned in promoting the exhibition, and full particulars of the various attractions provided. A selection of music is performed each day by high class bands. Technical lectures are delivered daily, in popular style, on subjects such as the uses of gas, the prevention of town smoke, maintenance of incandescent gas burners, gas hygiene and ventilation, the poor man's light, modern lighting, etc. Cookery demonstrations are given twice daily by Mrs. Middleton, high class cookery being taken in the afternoon, and plain household work in the evening. Cookery being competitions, which were such a successful feature at Earls Court for scholars attending elementary secondary or technical schools, are held daily, and in two sections, a junior for candidates under 14, and a senior of those between 14 and 17 years of age. The exhibits in the main body of the hall include 67 stands, and in the gallery there is an excellent collection of drawings and models of gas works plant. So that, apart from the general interest attaching to the show, it affords a unique opportunity for young men entering the gas profession, or intending to do so, to add largely to their store of technical knowledge. A gathering of the Junior Gas Association from all parts of the country was held on Saturday last week, and was a great success, some 250 members being present, and a meeting of the Midland Association is to be held. The value of the catalogue to the gas man is enhanced by a series of excellent portraits of the gentlemen concerned in promoting or in opening the exhibition, and it includes several whose names are household words, and who have taken as prominent a position in connection with the industry generally, as they have so competently filled in respect to the Manchester Exhibition.

One cannot pretend, in the space at command, to give anything like a full indication of the novelties in every department, incandescent lighting burners, cookers, gas fires, etc., that are to be seen in the exhibition hall. But there is one instrument exhibited, I believe for the first time, that possesses special importance in connection with ordinary gas works operations of a modern character. It is a patent fact that the photometer is gradually shifting into a back seat, in the gas works testing room, and that the calorimeter is taking its place. In other words, that the candle power, once regarded as so important

that a reading was taken at least once every day in any gas works under statutory obligations, is not now so much in evidence as the heating value. Messrs. Simmance and Abady, of the firm of Alexander Wright & Co., are therefore worthily upholding the established position of their firm as makers of gas works testing apparatus, and also meeting a pressing need of the times, in introducing an instrument under the title of a Calorimeter, which is intended to occupy the same position in regard to calorific value that the jet photometer holds towards phometrical or candle power, and to afford a direct reading at a moment's notice of the heating value, such as we are accustomed to get from the jet photometer for candle power, of the calorific value on a scale showing a range of every two degrees between 400 and 800° B.T.U. There is no necessity to enlarge on the need for such an instrument. The gas engineer can scarcely hand over his calorimeter to the retort house foreman. And especially in regard to water gas manufacture is it necessary to watch the calorific value. In the coal gas retort the quality of the product is fairly regular, but in the cupola or producer it may vary widely, one run with another. If the introduction of this instrument leads to further investigation into the subject of the control of calorific value, so that the engineer can make a 600 to 620 B.T.U. gas, with the same certainty and regularity as he can now keep to 16, 17, or any desired candle power, Messrs. Simmance and Abady will have conferred a most important service upon the profession at large. The expansion of ideas in regard to distribution pressures is evidenced in the stand of gauges exhibited by the same firm, some of which extend up to 36 inches on the scale.

Our already somewhat heavily loaded bookshelf, is enriched this year by the addition of two new magazines, one for the practical man, and the other for his customers. The first named is a copy of an American magazine called the "Illuminating Engineer," for January last, which is presented as a specimen of a publication on similar lines to be commenced in London next January. The gas manager in a small way has had to rub up a fairly good acquaintance with illumination problems, seeing that he is continually being consulted on matters such as the introduction of modern incandescent burners for street lighting, and for churches and public buildings, in place of the flat flame, and in large towns this important department is handed over to the care of a competent inspector or foreman, who probably requires a large staff to assist him, especially if he undertakes maintenance. The need for better technical information amongst those who actually come in contact with the consumer is continually being evidenced in various ways, and they should be encouraged in every possible way to improve their knowledge of the subjects in respect to which their advice is frequently asked. No doubt the magazine in question is well known to most of your readers. Some reference is made to the Illuminating Engineering Society of New York, and the desirability of forming a similar society in England is under consideration. There is room for such a society to undertake educational work for all classes of workers engaged in fixing meters, stoves and lighting fittings, or in the care and maintenance of such. One or two travelling lecturers might be available for any gasworks staff desiring their services, and in country districts the employees of small works might gather at a convenient center. Such a society might also undertake the holding of examinations and the granting of certificates. The second publication emanates from the offices of the *Gas World*. Its title is "Gas Progress," and it is issued quarterly, being intended for distribution amongst present or prospective users of gas, as a medium for information on the latest developments, in connection with gas appliances, and the proper way of using them. It evide ly aims at imparting, in a light attractive style, just that kind of instruction that every gas consumer should not fail to possess, yet does not trouble to grasp. This magazine, drawn up in recreative form, with a taking illustration on the front page, may perhaps succeed where the text book and pamphlet have failed. It will probably be read by the opposite sex, who as a rule look upon anything "scientific" as an abomination, and do not take kindly to pamphlets bearing titles such as "how to use the gas," or "the science and practice of everyday gas lighting and heating." These two examples are given as examples of new departures, and not as covering every attempt that has been made to assist either the gas engineer or the gas consumer.

ITEMS OF INTEREST FROM VARIOUS LOCALITIES.

"W. J. M.," writing from Ishpeming, Mich., under date of the 23d ult., says that the output of the Marquette County (Mich.) Gas and Electric Company for October last was almost double that of the corresponding month in 1906, and that the output for last month will be more than double that for November, 1906. The Company is installing an additional bench of 6's in order that it may successfully cope with the winter demand. The electric division of its trading is also going along in the most satisfactory manner. The improvements on the electric division of the plant include an additional D. C. unit for street railway account, with storage battery auxiliary: also, a new 500 kw. turbine for the electric lighting station.

We are in receipt of Catalogue No. 140, issued recently by the B. F. Sturtevant Company, which has to deal with positive pressure blowers. The listing is beautifully done.

That Mr. Charles A. Learned, the Superintendent of the Meriden (Conn.) Gas Light Company, is about as clever an arranger of a contract as he is adept in planning for the construction of plant housings, office buildings and the like, is fully proved by that which he brought to a safe termination something over a fortnight ago. About 4 years ago Mr. Learned closed for his Company with the city, a contract under which the former was to maintain 200 arcs, 2,000-candle power, nominal, for a period of 5 years, the rate to be $120 per arc per annum, the lighting schedule to cover 4,000 hours. The Company having looked over the situation, and having in that looking, noticed a lingering desire on the part of some New England "communities" a lurging desire to experiment in the field of municipal lighting, Mr. Learned suggested that it might be prudent were they to approach the authorities with a view of extending the contract or securing a new one. Mr. Learned interviewed the Mayor, and the latter (who is also city editor of Meriden *Evening Journal*) asked the former to submit a proposition. He quickly handed in this: 1 year; at $105 per lamp; 4 year, additional, at $100 per lamp – the contract to date from October 1st. Of course, the proposal was sent to the Board of Works, and Superintendent Learned followed it with a neat oral argument on the merits of the matter. The Mayor consulted with the Board, and they came back with this counter proposition: Contract to run for 5 years, from December 1st, 1907, to December 1st, 1912; rate per lamp per annum, $100 for the life of the contract. The scale was accepted and ratified, and the contract is now being carried out. And there you are, with Mayor Reilly assenting.

Mr. C. C. Sloan, General Superintendent of the Calumet Gas Company, writing from Laurium, Mich., reports that the Company is enjoying an unusual percentage as to the applied uses of its output. Out of the total, 70 per cent. is taken up on lighting account, in which percentage no public lighting figures, that service being all done by electrical currents. Mr. Sloan also notes that the electrical service is an excellent one. The leakage on account is averaging quite a bit less than 6 per cent.

The result of the election to determine whether or not the gas plant at Bennington, Vt., would hereafter be operated on public account was in the negative.

A certificate declaring the incorporation of the Ambraw Gas Company, of Lauranceville, Ills., has been filed with the Secretary of State. Its capital stock is placed at $25,000, and its incorporators are Messrs. Charles J. Borden, R. L. Fitch and Thomas Whittaker, all of Lauranceville.

Notice has been filed with the Secretary of State of Maine that the shareholders of the proposed Peaks' Island Gas Company have voted to increase the capital stock from $10,000 to $50,000.

On account of continued ill health Mr. W. H. Bryant has been obliged to resign the post of Manager of the Brattleboro (Vt.) division of the Twin State Gas and Electric Company. His successor is Mr. F. R. Hoy, of New York.

Under a special franchise, Messrs. John F. Brush and William M'Bain agreed to supply gas to the residents of Holley, N. Y., the named parties are to pipe gas from the gas works at Brockport. The correspondent who forwarded us this item, adds: "The chief reason why gas is needed in Holley (there is an electric light plant in operation here) is that the village electric plant is already overcrowded and that an extension of the service would necessitate the expenditure of thousands of dollars for new machinery."

It is with much pleasure that we announce that Mr. Ralph Woodward, formerly General Manager of the Pittsfield (Mass.) Coal Gas Company, is greatly improved in health, and has taken up a residence at No. 11 Auburn street, Worcester, Mass. Let us hope he will soon be actively in harness.

Mr. M. MacDonald has been appointed Superintendent of the Citizens Gas Company, of Tamaqua, Pa., vice Mr. H. C. Dreher.

At the 38th annual meeting of the Ocean Grove (N. J.) Camp Meeting Association, which was held the 21st November, a large attendance was registered, as two important measures were to be considered,

the major of which was that submitted by the Hotel and Business Men's Association. In their petition it was positively asserted that the residents were a unit in their demand for a gas supply, on account of economy, convenience and necessity. The petition was orally supported by the business men and several of the prominent residents, but in the end the petition was denied, some of the arguments in opposition offered being the expense attached to the erection of a plant, and the likelihood that such a plant would cause great loss in the operation of the electric lighting plant now operated by the Association. Talk about municipal control and the incapacity thereof! Then clerical control! "All Heaven and Saints defend us.—EDEN."

A PECULIAR accident occurred in New Bedford, Mass., last week which put the gas supply of the city north of Maxfield street out of commission for several hours. A 6-inch gas main crossed a 4-inch water main at Purchase and Maxfield streets, and during a severe rain storm the water main cracked, letting down the gas main which, too, in sagging, broke. The water entered the gas main, and in its backing up course flooded several hundred gas meters, many of which burst, the water flooding the cellars, and ascending the house pipes, spirted out at the burner tips doing much damage to furniture and causing great discomfort. The gas supply of course was speedily cut off, and it was several days before anything like order was restored. The water main collapsed first. Who is responsible for the damage, the city or the Company?

THIS is from the Passaic (N. J.) *Herald* of the 23d ult.: "Mr. Thomas U. McCarter, President of the Public Service Corporation of New Jersey, gave out a statement in Newark yesterday announcing the executive changes that are to become effective the first of the year. The announcement that Vice-Presidents A. B. Carlton and Charles A. Sterling are to step down and out, and that Secretary Frederick Evans is to be succeeded by Assistant Secretary E. E. Hine is confirmed in President McCarter's statement. It also states that George J. Roberts, at present Chief Engineer of the United Gas Improvement Company, of Philadelphia, will succeed Carlton, while John J. Burleigh, one of the present Vice-Presidents of the Public Service Corporation, will succeed Sterling. The former will have charge of the operating of the system and the latter of the commercial department. By the changes about 20 of the executive departments will be affected, and where there are not removals there will be reductions in salary. The statement claims that the organization has been much simplified by the taking over of all the interests, trolley and lighting, by the Public Service Railway, the constituent Company that was organized recently at the time of the merger of the interests. In addition to curtailing expenses in the managerial force, according to the statement, there will be a curtailing in the expenses of the offices in the various cities, as hereafter the gas and electric lighting business will be conducted in the same office in each place instead of in separate offices as now. There will be six divisions, with headquarters as follows, under the management of these general agents: Newark, R. R. Young; Jersey City, F. W. Schmidt; Paterson, C. W. H. Rogers; Hackensack, E. C. Roberts; Elizabeth, H. P. Chandler; Camden, W. H. Allen. They cover the counties of Essex, Passaic, Bergen and Union and the southern part of the State."

THE Greenville (O.) gas ordinance gives to its proposers the right to manufacture and distribute gas in that settlement for a period of 25 years. It is also specified that the selling rate may not exceed $1 per 1,000 cubic feet.

THE Commercial Club, of Rockland, Mass., is agitating the subject of a gas supply for that place. Perhaps the Brockton Company could be induced to pipe into Rockland.

THE Baltimore (Md.) newspapers are our authority for the statement that arrangements have been completed by the Baltimore Consolidated Gas, Electric Light and Power Company for leasing the Baltimore Electric Company for a period of 999 years, and that the shareholders in both corporations had ratified the action of their Board of Directors. Under the agreement the purchaser acquires all the common stock of the Baltimore Electric (the total thereof is $2,500,000), and further agrees to guarantee the interest payments on its 5 per cent. bonds, and the principal thereof as well; also to pay the 5 per cent. on the guaranteed preferred stock. The purchaser was represented in the negotiations by Mr. S. Davies Warfield. This seems to put the Consolidated Company in virtually absolute control of the public lighting supply of Baltimore, which supply will be carried out in accordance with the live and let live policy.

THE Appellate Division of the New York State Supreme Court has handed down a decision in the instance of the Constitutionality of the Act of 1905, which gave to the then Commission of Gas and Electricity the power to fix rates that might be charged by public service corporations of the type named. The case argued was that of the Saratoga Gas, Electric Light and Power Company vs. the ruling of the Commission fixing the maximum charges complainant could make on the following basis: Gas, $1.45 per 1,000 cubic feet; electricity, 8 cents per kilowatt hour. The decision of the Court, however, was a decidedly split one—3 to 2. In the affirmative, Justices Lloyd, Chester and Cochrane; in the negative, Justices Kellogg and Sewell. Both divisions handed in written opinions, and these we will publish at the earliest possible moment.

THE proceedings before Judge Hough, in the United States Circuit Court for this district, respecting the findings of Master Masten in the suit brought by the Consolidated Gas Company, of this city, to have the 80-cent gas rate declared unconstitutional, were exceptionally interesting. Perhaps the brief submitted by Mr. James M. Beck will give a fair idea of the line of argument suggested by the Consolidated Company's counsel in a general way - certainly Mr. Beck is a master in the way of lucidity. We give the following condensation of his brief:

"It is undoubtedly a difficult task to determine what is a reasonable rate. In the absence of any testimony to the contrary, the presumption is that a public service corporation is entitled to the rate of return which is prescribed by business usage. Six per cent. is allowed for the use of money elsewhere. Certainly, when capital is at stake, there should be no less than that amount.

"I. The rates prescribed for the sale of complainant's gas are confiscatory, and, therefore, take the complainant's property 'without due process of law,' and deprive the complainant of the 'equal protection of the laws,' in violation of the 14th Amendment to the Constitution.

"II. As compliance with the provisions of each of these statutes as to pressure is impossible, each act operates to take the property of the complainant without 'due process of law.'

"III. As the penalties provided for in each of these acts are excessive, and as they are calculated and obviously intended to deter the complainant from litigating its rights, they deny to the complainant the 'equal protection of the law.'

"Apart from these objections, which are common to all the acts referred to, each of said acts has special features, which render it unconstitutional and as to which we submit the following propositions:

"IV. Chapter 736 of the laws of 1905 is unconstitutional, in that it compels the complainant, without adequate reason, to sell to one consumer at a less price than it is permitted to sell to other consumers.

"V. Chapter 737 of the laws of 1905 is void under the Constitution of New York, because it delegates its function of legislation in part to an Administrative Board and in part to the judiciary.

"VI. The order of the Gas Commission is also unconstitutional, as it denies to the complainant any return whatever upon its franchise.

"VII. Chapter 125 of the Laws of 1905 is unconstitutional, because

"(1) Without adequate reason it compels the complainant to sell to certain consumers at a less rate than to others.

"(2) It discriminates between gas companies in the city of New York and gas companies in other portions of the State.

"(3) It denies to the complainant the equal protection of the laws, in depriving it of an appeal to the Appellate Division, which, by Chapter 737 of the Laws of 1905, is given to all other gas companies elsewhere than New York city."

Comparing the 80-cent gas law with the law constituting the Interstate Commerce Commission, Mr. Beek continues:

"The legality of the Interstate Commerce Commission and its power to fix rates has always been sustained on the theory that Congress first enacted that rates should be just and reasonable and that it simply delegated to the Commission the power of applying this standard to individual cases. It will be noted that this interpretation is accepted by the Attorney General, who made a legislative standard of regulation preliminary to any power to delegate actual estimation of rates.

"In the act now under consideration, the Legislature has wholly failed to provide in any manner whatever, even by the most general language, what rates shall be imposed. This act simply delegates in the most sweeping language all of the power which the Legislature has, with reference to the manufacture, sale and distribution of gas and electricity, to three officials with plenary authority, subject only to an appeal to the Appellate Division of the Supreme Court.

"Under this sweeping delegation, there is absolutely no detail of the gas or electricity business, which the Commission may not arbitrarily prescribe. If the Legislature can delegate absolute and unrestricted power to a commission as to gas and electricity, it can do so as to every other industrial occupation in which there is a public use. It can thus practically abdicate its own functions and instead of having one Legislature sitting at Albany, the State will, in effect, have 100 different Legislatures."

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NOTIFICATION RESPECTING ADVERTISING.

Orders for new advertising, or for changes in standing advertisements, to insure attention in the issue following their reception, must be in hand any time of Wednesday.

AGENTS:

New York—American News Co., 39 and 41 Chambers St.
Germany—Lemcke & Buechner, of New York.
England—Aug. Siegle, 30 Lime Street, London.

MONDAY, DECEMBER 2, 1907.

The Market for Gas Securities.

The trifling degree of greater ease in the money market is undoubtedly responsible for the 7-point gain in Consolidated gas since last Friday. The stock opened to-day (Friday) at 89 bid, and by noon had gone to 90 bid. The selling figure was 90½. No matter whether referee Masten is sustained or not, Consolidated, even with gas at 80 cents per 1,000, is worth for cash $125 per share as an investment.

Brooklyn Union is absolutely neglected, at 80 bid. Peoples, of Chicago, also marks a gain of a point on last week. It is still 40 points under its real value. Massachusetts gas is strong. Take it all round, it looks that the very lowest ebb was reached last week.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

16 WALL STREET, NEW YORK CITY.

DECEMBER 2.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share.

N. Y City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked.*
Consolidated	$73,177,000	100	90	90½
Central Union Gas Co.—				
1st 5's, due 1972, J. & J.	3,000,000	1,000	92	97
Equitable Gas Light Co.—				
Con. 5's, due 1932, M. & S.	1,000,000	1,000	..	105
Mutual	3,500,000	100	..	170
New Amsterdam Gas Co.—				
1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	75	90
New York & Richmond Gas Co. (Staten Island)	1,500,000	100	37	43
1st Mtg. Gold Bds. 5 p.ct.	1,000,000	..	98	104
Northern Union—				
1st 5's, due 1927, J. & J.	1,250,000	1,000	90	98
New York and East River—				
1st 5's, due 1944, J. & J.	3,500,000	1,000	100	105
Con. 5's, due 1945, J. & J.	1,500,000	..	97	101
Standard	5,000,000	100	70	100
Preferred	5,000,000	100	100	125
1st Mtg. 5's, due 1930, M. & N	1,500,000	1,000	100	105
The Brooklyn Union	15,000,000	1,000	80	90
1st Con. 5's, due 1948, M. & N	15,000,000	..	.	102
Yonkers	999,650	500	130	..
Out-of-Town Companies.				
Bay State	50,000,000	50	¼	⅜
" Income Bonds	2,000,000	1,000	..	75
Binghamton Gas Works	450,000	100	..	65
" 1st Mtg. 5's	509,000	1,000	95	100
Boston United Gas Co.—				
1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	5	8
" " Bonds, 5's	5,250,000	1,000	63	66
Capital, Sacramento	500,000	50	..	35
Bonds (6's)	150,000	1,000	..	..
Chicago Gas Co. Guaranteed Gold Bonds	7,650,000	1,000	104	106¾
Cincinnati Gas and Electric Co.	29,500,000	100	.	93½
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	92	98
Columbus (O.) Gas Lt. & Heating Co	1,682,750	100	87	88
Preferred	3,026,500	100	107½	109
Consumers, Toronto	2,000,000	50	200	204
Consolidated, Baltimore	11,000,000	100	..	90
Mortgage, 6's	3,600,000	..	..	118
Chesapeake, 1st 6's	1,000,000	..	..	..
Equitable, 1st 6's	910,000	..	..	..
Consolidated, 1st 5's	1,490 000	..	..	112
Consolidated Gas Co. of N.J.	1,000,000	100	15	17
Con. Mtg. 5's	880,000	1,000	92	95
Bonds	75,000	..	..	100
Detroit City Gas Co	5,000,000	50	..	50
" Prior Lien 5's	4,618,000	1,000	..	98
Detroit Gas Co., 5's	381,000	1,000	75	80
" Inc. 5's	16,000	100	98½	100
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000		101
Essex and Hudson Gas Co.	6,500,000	..	19	40
Fort Wayne	2,000,000	..	..	..
" Bonds	2,000,000	..	55	..
Grand Rapids Gas Lt. Co. 1st Mtg. 5's	1,225,000	1,000	104½	105
Hartford	750,000	25	190	200
Hudson County Gas Co., of New Jersey	10,500,000	..	100	105
" Bonds, 5's	10,500,000	..	101	102½
Indianapolis	2,000,000	..	60	70
" Bonds, 5's	2,650,000	..	104½	105
Jackson Gas Co	250,000	50	82	..
" 1st Mtg. 5's	290,000	1,000	97	100
Kansas City Gas Light Co., of Missouri	5,000,000	100	..	36
Bonds, 1st 5's	3,822,000	1,000	102	104
Laclede, St. Louis	10,000,000	100	..	100
Preferred	2,500,000	100	75	100
Bonds	10,000,000	1,000	104	104¼
Lafayette Gas Co., Ind.	1,000,000	100	..	60
Bonds	1,000,000	1,000	60	65
Louisville	2,570,000	50	143	145
Madison Gas & Elec. Co.				
" 1st Mtg. 5's	350,000	1,000	106	108¾
" 6 per cent. scrip, due 1910	100,000	25	60	60½
Massachusetts Gas Companies of Boston	25,000,000	100	45	45¼
Preferred	25,000,000	100	77½	77¾
Montreal, Canada	2,000,000	100	218	218¾
Nashville Gas Lt. Co.	1,000,000	100	110	..
Newark, N. J., Con. Gas Co.	6,000,000	..	56	58
Bonds, 6's	6,000,000		137	139
New Haven	2,000,000	25	200	..
Peoples G. Lt. & Coke Co., Chicago	25,000,000	100	73	73¾
1st Mortgage	20,100,000	1,000	..	..
2d "	2,500,000	1,000	104	..
Rochester Gas & Elec. Co.	2,150,000	50	88	..
Preferred	2,150,000	50	118	..
Consolidated 5's	2,000,000	..	104½	105¼
San Francisco, Cal.	15,500,000	00	..	..
St. Joseph Gas Co. 1st Mtg. 5's	751,000	1,000	92	..
St. Paul Gas Light Co	1,500,000	100	45	47
1st Mortgage 6's	850,000	1,000	113	116
Extension, 6's	600,000	1,000	112½	115
General Mortgage, 5's	2,465,000	1,000	96¼	..
Syracuse, N. Y.	1,975,000	100	50	55
Bonds	2,047 000	1,000	102	.
Washington, D. C	2,500,000	20	385	387½
1st Mortgage 6's	500,000	..	..	..
Western, Milwaukee	4,000,000	..	..	..
Wilmington, Del.	600,000	50	220	..

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DIVIDEND NOTICE.

OFFICE OF THE AMERICAN GAS COMPANY,
222 S. THIRD ST., Philadelphia, Pa., Nov 19, 1907.

The Board of Directors of The American Gas Company has this day declared a semi-annual dividend of 3 per cent., or $3 per share, on the capital stock of the Company, payable Dec. 2d, 1907, to stockholders of record on Nov. 22d, 1907, at 3 P.M. Transfer books close Nov. 22, 1907, and re-open Dec. 2, 1907. Checks will be mailed.

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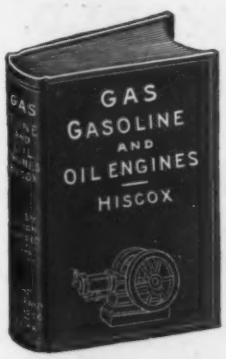

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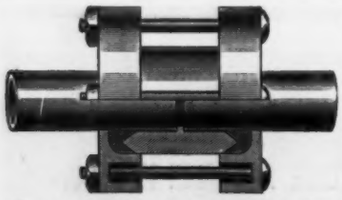

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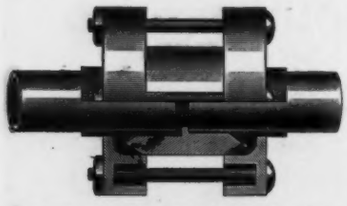

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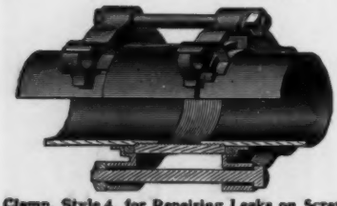

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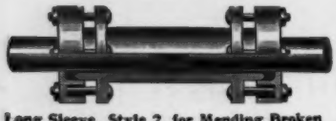

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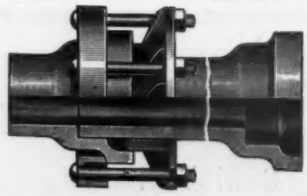

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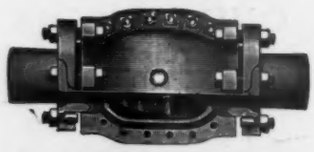

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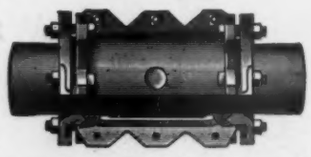

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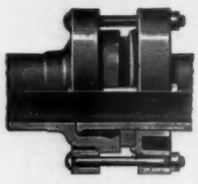

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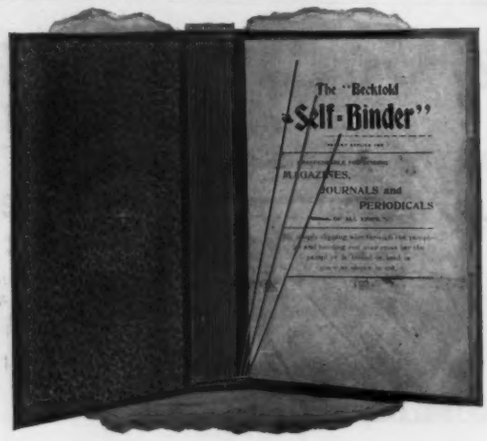

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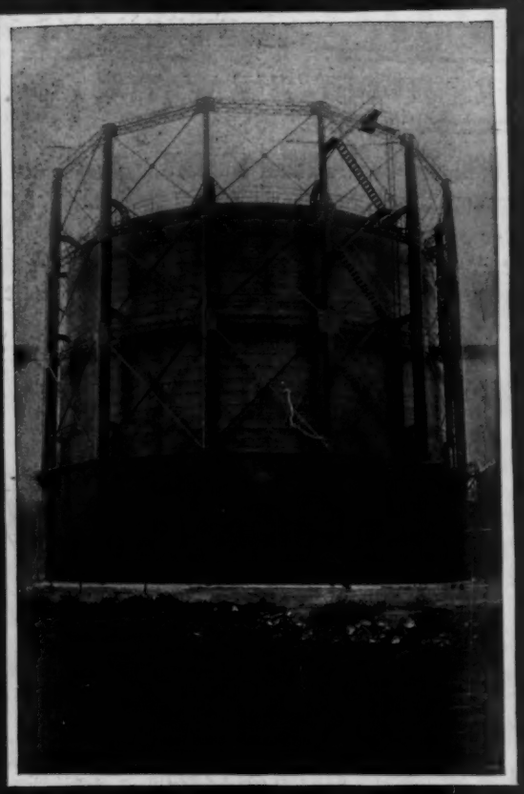

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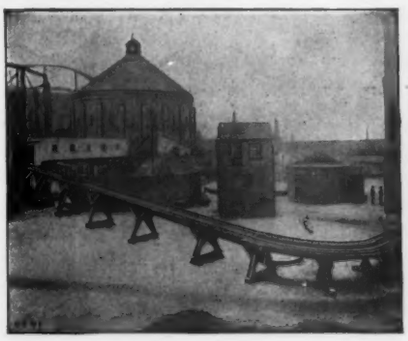

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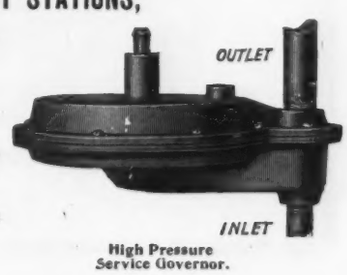

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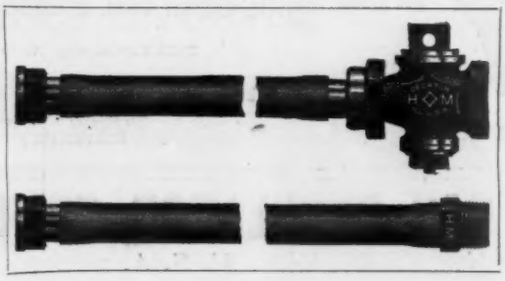

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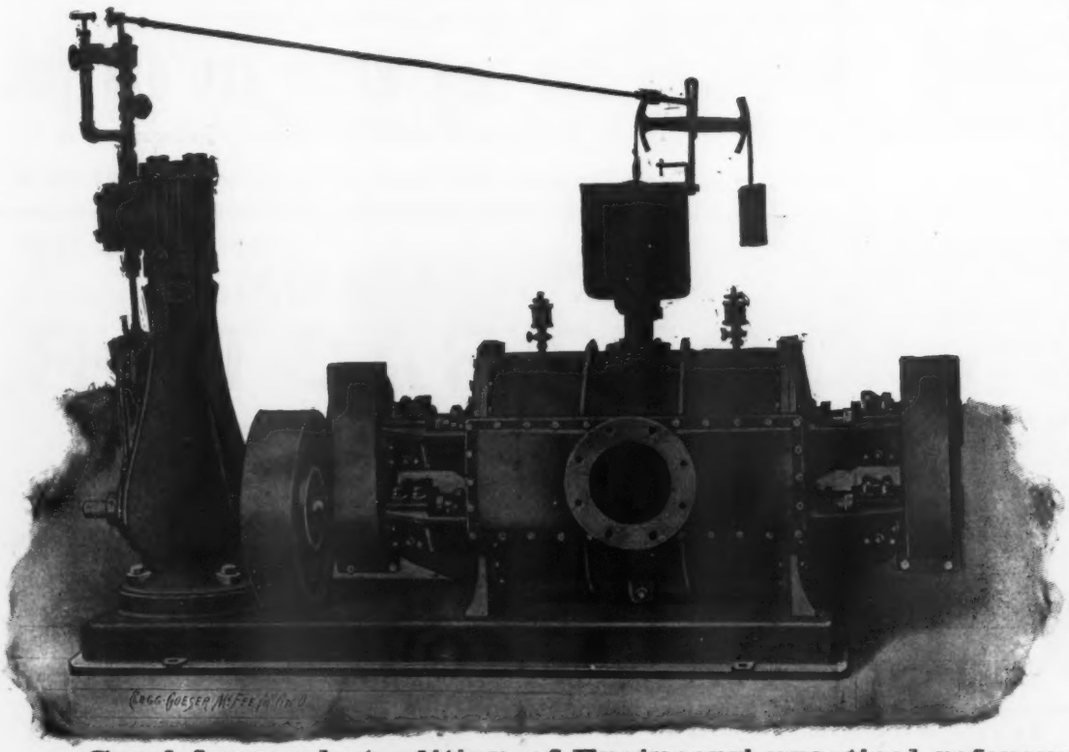

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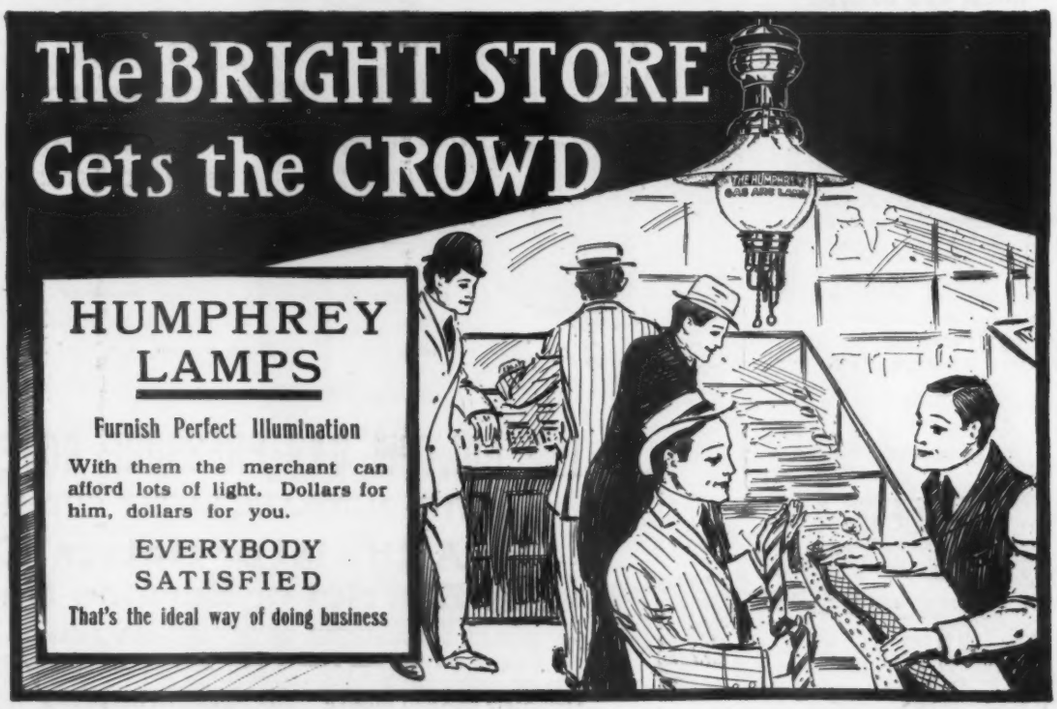

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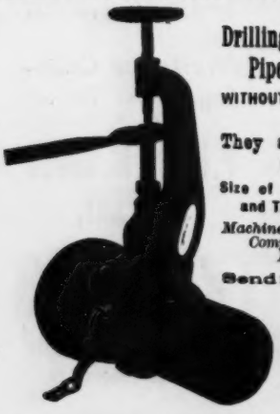

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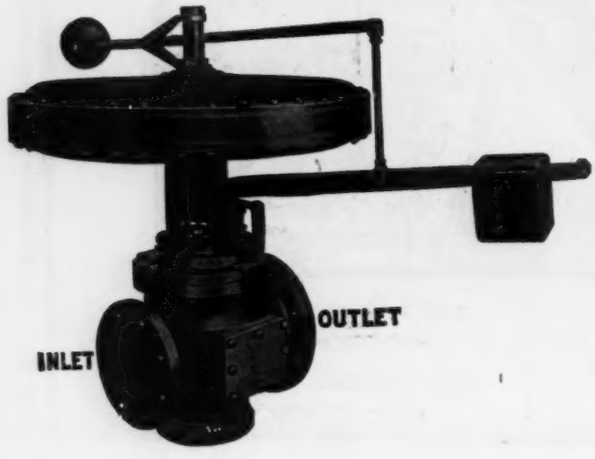

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PUBLIC LIGHTING TABLE.

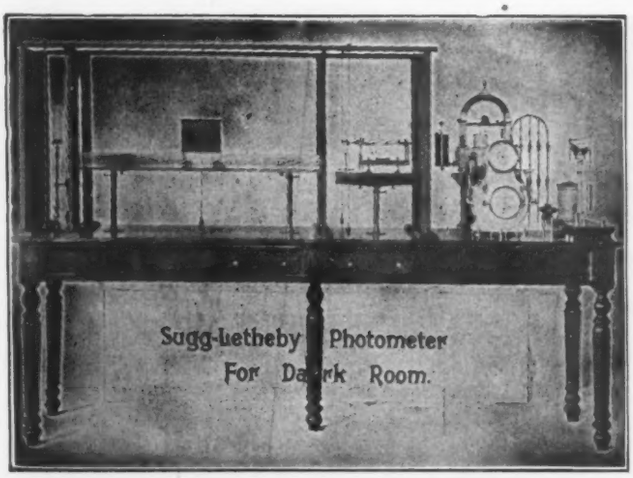
DECEMBER, 1907.

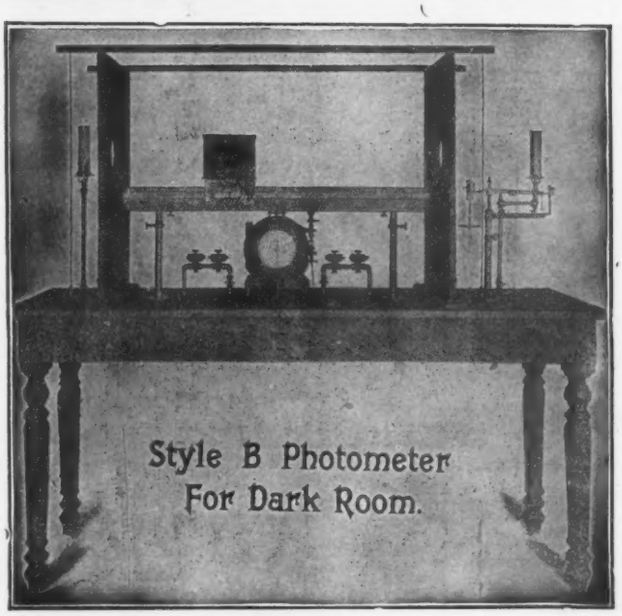
Day of Week.	Table No. 1. FOLLOWING THE MOON. Date.	Light.	Extinguish.
Sun.	1	5.00 PM	6.00 AM
Mon.	2	5.00	6.00
Tue.	3	5.00	6.00
Wed.	4	5.00 NM	6.00
Thu.	5	5.00	6.00
Fri.	6	5.00	6.00
Sat.	7	5.00	6.00
Sun.	8	5.00	6.10
Mon.	9	8.20	6.10
Tue.	10	9.30	6.10
Wed.	11	10 40 FQ	6.10
Thu.	12	11.50	6.10
Fri.	13	1.00 AM	6.10
Sat.	14	2.00	6.10
Sun.	15	3.00	6 20
Mon.	16	4.00	6.20
Tue.	17	5.00	6.20
Wed.	18	No L.	No L.
Thu.	19	No L FM	No L.
Fri.	20	No L.	No L.
Sat.	21	5.10 PM	7.20 PM
Sun.	22	5.10	8.20
Mon.	23	5.10	9.10
Tue.	24	5.10	10.10
Wed.	25	5.10	11.10
Thu.	26	5.10	12.10 AM
Fri.	27	5.10 LQ	1.10
Sat.	28	5.10	2.10
Sun.	29	5.10	3.20
Mon.	30	5.10	4.30
Tue.	31	5.10	6.20

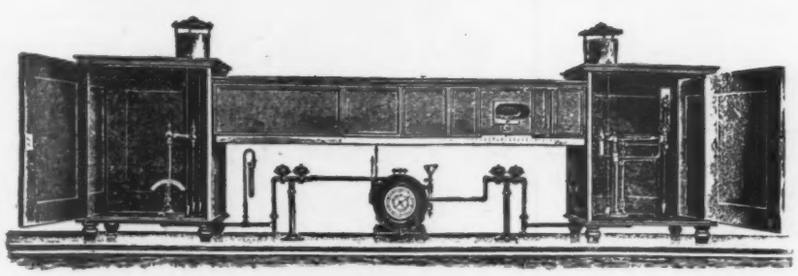
TOTAL HOURS DURING 1907.

By Table No. 1.

	Hrs.Min.
January	211.10
February	193.40
March	182.10
April	167.00
May	157.00
June	145.30
July	151.50
August	162.30
September	175.30
October	202.40
November	209.30
December	231.50
Total, yr.	2190.20







Closed Photometer For Light Room.

CIRCULARS SENT ON REQUEST.

PUBLIC LIGHTING TABLE.

DECEMBER, 1907.

Day of Week.	Table No. 2. NEW YORK CITY. All Night Lighting. Date.	Light.	Extinguish.
		P. M.	A.M.
Sun.	1	4.20	6.10
Mon.	2	4.20	6.10
Tue.	3	4 20	6.15
Wed.	4	4 20	6 15
Thu.	5	4 20	6.15
Fri.	6	4 20	6.15
Sat.	7	4 20	6.15
Sun.	8	4.20	6.15
Mon.	9	4.20	6.15
Tue.	10	4.20	6.20
Wed.	11	4.20	6.20
Thu.	12	4 20	6.20
Fri.	13	4 20	6 20
Sat.	14	4.20	6.20
Sun.	15	4 20	6.20
Mon.	16	4 20	6.20
Tue.	17	4.20	6 20
Wed.	18	4.20	6.20
Thu.	19	4 20	6.20
Fri.	20	4 20	6.20
Sat.	21	4 20	6.20
Sun.	22	4.20	6.20
Mon.	23	4.20	6 20
Tue.	24	4.20	6.25
Wed.	25	4.20	6.25
Thu.	26	4.20	6.25
Fri.	27	4 20	6.25
Sat.	28	4.20	6.25
Sun.	29	4.20	6.25
Mon.	30	4.20	6 25
Tue.	31	4.20	6 25

TOTAL HOURS DURING 1907.

By Table No. 2.

	Hrs.Min.
January	423.20
February	355.25
March	355.35
April	298.50
May	264.50
June	234.25
July	243.45
August	280.25
September	321.15
October	374.30
November	401.40
December	433.45
Total, yr.	3987.45

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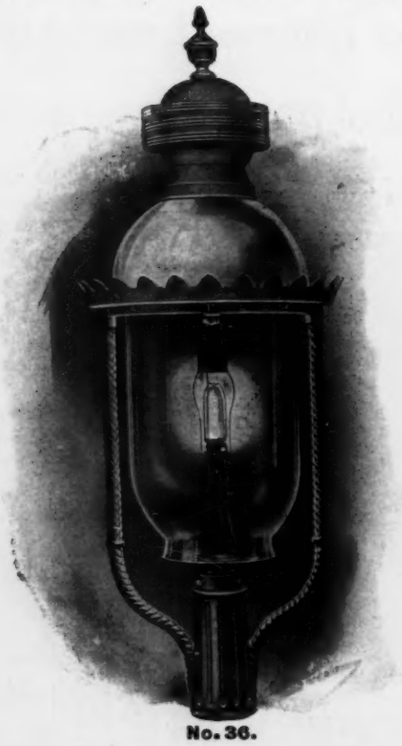
....OF AMERICA....



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Coney Island, N. Y.
Mexico, Mo.
Jacksonville, Fla.
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Atlanta, Ga. (3d contract).
Holyoke, Mass.
Peoria, Ills.
Schnectady, N. Y. (2d contract).
Danbury, Conn.
Galveston, Tex. (2d contract).
Quebec, Canada.
Indianapolis, Ind. (2d contract).
Bessemer, Ala.
Waterbury, Conn. (5th contract).
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TOTAL SETS INSTALLED TO JULY 1, 1907, ... 34
TOTAL SETS TO DATE, ... 668
TOTAL DAILY CAPACITY, ... 541,655,000 cu. ft.

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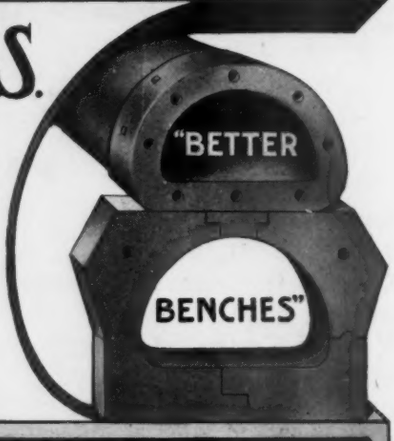

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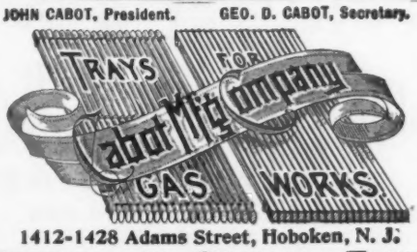

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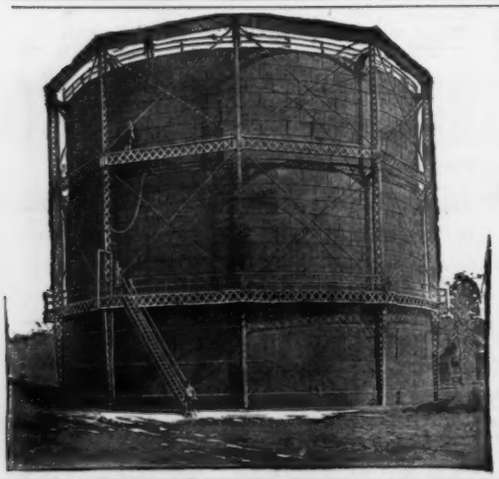

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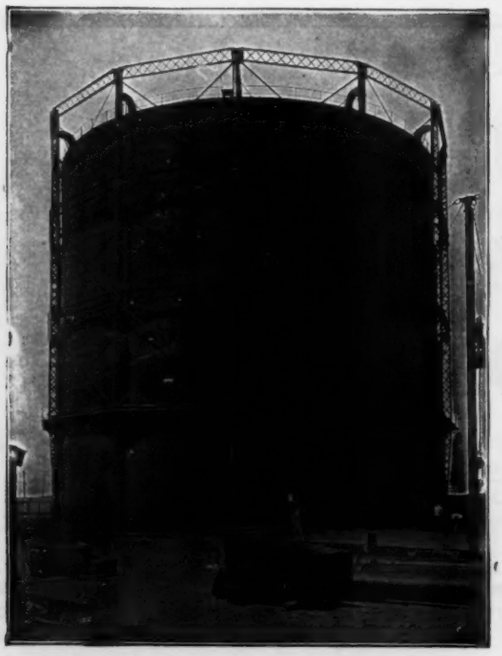

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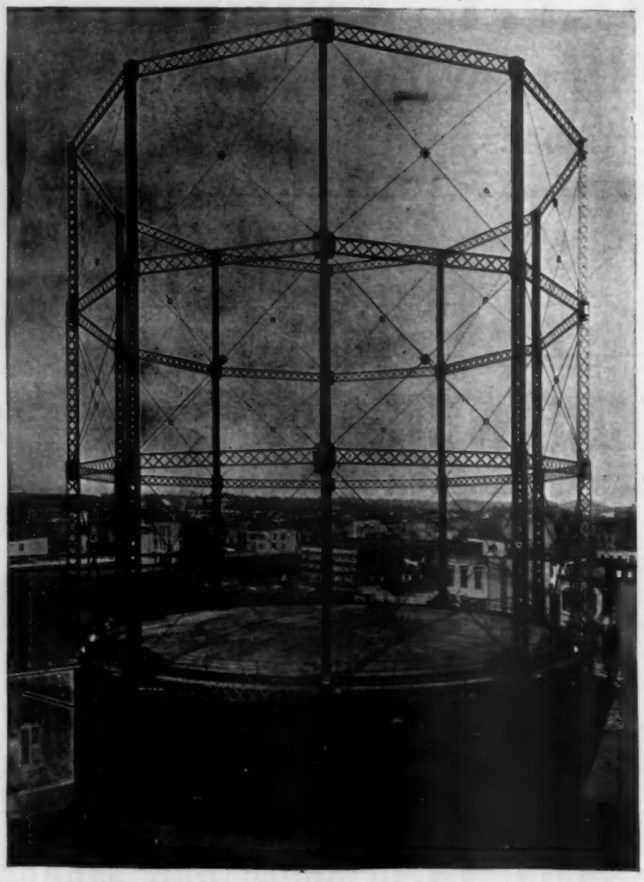

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